COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK

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Dedicated

to

my Parents

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Dr Jaskaran Singh

LIST OF ABBREVIATIONS

AMP	Adenosine monophosphate
ASA	American Society of Anaesthesiologists
BMI	Body mass index
Cms	Centimeters
CNS	Central nervous system
CVS	Cardiovascular system
DBP	Diastolic blood pressure
HR	Heart rate
Kg	Kilograms
LA	Local anaesthetic
MAP	Mean arterial pressure
MB	Motor block
MBS	Modified Bromage Score
mins	minutes
ml	milliliters
NIBP	Noninvasive blood pressure
PAC	Pre anaesthesia checkup
PKa	-Log of acid dissociation constant
SA	Spinal anaestheisa
SAB	Subarachnoid block
SB	Sensory block
SBP	Systolic blood pressure
SD	Standard deviation

SPO2	Oxygen saturation
TURP	Transurethral resection of prostate
VAS	Visual Analogue Score

ABSTRACT

Introduction: Bupivacaine has been used as a preferred drug for subarachnoid block for a long time, but due to its long duration of action and associated side effects like cardio and neurotoxicity, newer drugs like ropivacaine and levobupivacaine are being evaluated as safer substitutes. Recently 0.5% levobupivacaine and 0.75% ropivacaine have been made commercially available. In the current study, we compared levobupivacaine and ropivacaine, to determine which one, out of these could be a better alternative to bupivacaine.

Aim of Study: To compare the sensory and motor block characteristics of hyperbaric Levobupivacaine and hyperbaric Ropivacaine for subarachnoid block in terms of time of onset of sensory and motor block, highest level of sensory block and degree of motor block and duration of sensory and motor block, intraoperative hemodynamic changes and side effects and duration of postoperative analgesia.

Materials & methods: A prospective, randomized, double-blind study was conducted on ASA I and II adults. A total of 70 patients were recruited for the study and were randomly divided into 2 groups. Patients of group R received 3ml of hyperbaric ropivacaine 0.75% and group L received 3ml of hyperbaric levobupivacaine 0.5% in subarachnoid block. Primary outcomes observed were sensory and motor block characteristics (time of onset, highest level, and duration of sensory and motor block), and secondary outcomes were perioperative complications, duration of postoperative analgesia, and 24-hour postoperative analgesic consumption. Data thus collected was analyzed statistically.

Results: The levobupivacaine group had a faster onset of sensory block compared to the ropivacaine group. The maximum sensory level achieved was similar in both groups. Time to reach peak sensory level was quicker in the levobupivacaine group. Sensory block regression to T12 was faster in the ropivacaine group. Onset of motor block was faster with levobupivacaine, and the maximum grade of motor blockade achieved was comparable. Time to reach maximum motor blockade was faster in the levobupivacaine group, while motor block regression to MBS grade 0 was quicker in the ropivacaine group. Intraoperative hemodynamics were similar, with a slightly higher incidence of nausea and vomiting in the levobupivacaine group, and the duration of analgesia was longer in the levobupivacaine group.

Conclusion: In conclusion, intrathecal hyperbaric 0.5% levobupivacaine offers a faster onset and longer duration of sensory and motor blocks than 0.75% hyperbaric ropivacaine. Both drugs deliver satisfactory anesthesia for below-umbilical surgeries and maintain stable intraoperative hemodynamics. While both drugs also provide adequate analgesia, 0.5% hyperbaric levobupivacaine stands out for its prolonged duration of analgesia.

Keywords: Hyperbaric, Ropivacaine, levobupivacaine, subarachnoid block, below umbilicus surgeries.

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INTRODUCTION

Regional anaesthesia provides a variety of benefits over general anaesthesia, including the ability to provide effective pain alleviation during and after surgery, superior muscle relaxation, and minimal intraoperative bleeding.[1] In terms of analgesia quality and reduced adverse effects, regional anaesthesia techniques also surpass systemic opioid agents.[2]

In terms of methods used most often is spinal anaesthesia, which is differentiated by its exceptional efficiency and affordability, simplicity, and reliability. It guarantees a rapid and effective onset of sensory and motor block, resulting in extended postoperative pain relief and outstanding muscle relaxation. The procedure of spinal anaesthesia entails the suppression of neurons in the subarachnoid space through the application of regional anaesthesia. Neuraxial anaesthesia is notably advantageous over general anaesthesia for surgeries that occur below the umbilicus, as it allows for the execution of a multitude of significant procedures while the patient is awake.

The main objective of ambulatory anaesthesia is to attain a speedy recuperation requiring less hospital stay. The adverse effects of anaesthesia during the recovery phase have been considerably reduced by the availability of high-quality monitoring devices and fast-acting anaesthetic, analgesic, sympatholytic, and muscle-relaxant drugs.[3]

In the global context, spinal anaesthesia is highly favoured for its ability to facilitate rapid patient turnover, exceptional intraoperative anaesthesia, prolonged and satisfactory postoperative analgesia, and low drug costs. Consequently, it has emerged as the preferred method for lower abdominal, lower limb, pelvic, and perineum operations, surpassing general anaesthesia.[4]

The optimal intrathecal agent for ambulatory surgery should exhibit minimal adverse effects, consistently regress within a suitable time frame, and swiftly induce motor and sensory blockade. Injecting a local

anesthetic solution into the subarachnoid space disrupts the transmission of nerve impulses along all the nerves it contacts, though some nerves may be more easily blocked than others. Hence, achieving optimal spinal anaesthesia involves selecting the right local anesthetic, which should provide the necessary level of anaesthesia and pain relief without causing negative side effects also, the administration of spinal anaesthesia requires a high level of skill and familiarity with the technique to avoid the failed effect.

In 1899, August Bier first introduced the technique known as "cocainization of the spinal cord," utilizing cocaine, the drug that pioneered spinal anaesthesia. However, due to the numerous side effects associated with cocaine, lignocaine soon became the preferred choice (Wulf, 1998).[5] Later, it was discovered that 5% lignocaine heavy could induce transient neurological symptoms, leading to its discontinuation in regular practice (Rigler et al., 1991).[6] Consequently, bupivacaine emerged as the most commonly used drug for spinal anaesthesia (McLeod et al., 1995).[7]

The first studies that looked at using ropivacaine for spinal anaesthesia suggested that its shortened duration in comparison to bupivacaine could provide anaesthesiologists with a valuable alternative for ambulatory patients.[8-11] Studies have demonstrated that spinal ropivacaine is approximately fifty percent less efficacious than bupivacaine.[12] Levobupivacaine retains the same efficacy as racemic bupivacaine.[13]

Hyperbaric solutions are regarded as more reliable due to their broader and more targeted distribution, resulting in lower variability between patients. Initially offered solely as an isobaric preparation, these local anaesthetic drugs require the addition of dextrose to form a hyperbaric solution when necessary.[14] Hyperbaric ropivacaine and hyperbaric levobupivacaine preparations have been recently made commercially available in India.

Bupivacaine 0.5% has been the preferred medication for subarachnoid blockage in the past. Nevertheless, the patient's recovery of motor

function is delayed and their stay in the post-anaesthesia care facility is extended by a considerably extended duration of action.[15] The necessity for the development of newer stereo-selective local anaesthetic agents, such as ropivacaine and levobupivacaine, was identified as a result of reports of cardiotoxicity and neurological adverse effects in patients who were administered intrathecal bupivacaine.[16]

One of the most well-known long-acting regional anaesthetics for spinal anaesthesia is bupivacaine. Block onset typically lasts 1.5-3 hours and occurs within 5-8 minutes. The block's regression below the level of S2 to facilitate mobilisation and micturition is sluggish, with a range of 240 to 380 minutes. Nevertheless, it has been shown that the R(+) and S(-) enantiomers of local anaesthetics have varying affinities for various ion channels, including sodium, potassium, and calcium. Consequently, the S (-) enantiomer exhibits a substantial decrease in cardiac and central nervous system (CNS) toxicity when contrasted with the R(+) enantiomer.[17]

Thus, the clinical anaesthesia practice was introduced to the pure S (-) enantiomer of bupivacaine, known as Levo-bupivacaine, and the pure S (-) enantiomer of propivacaine, known as Ropivacaine.

Levobupivacaine is the S (−) enantiomer of bupivacaine and is a suitable alternative to bupivacaine for spinal anaesthesia due to its reduced cardiotoxicity. Studies have shown Levobupivacaine generates subarachnoid blocks that exhibit comparable sensory and motor block characteristics and recovery profiles to those of bupivacaine. The higher protein binding rate of levobupivacaine is responsible for its reduced cardiotoxicity. Hyperbaric levobupivacaine accelerates the onset of sensory and motor block.[18]

Ropivacaine is a pure S (-) enantiomer that is long-acting and was created to mitigate potential toxicity. The rate of rise of the action potential during phase 0 is slowed by local anaesthetics like ropivacaine and bupivacaine because they hinder the rapid inward flow of sodium ions into heart cells

during depolarization. Ropinivacaine has a quicker recovery time from sodium channel block than bupivacaine, which likely contributes to bupivacaine's higher cardiotoxicity. moreover ropivacaine's stereoselective properties, in conjunction with its lower lipophilicity than bupivacaine, result in a substantially higher threshold for cardiotoxicity and CNS toxicity than bupivacaine.[19] Studies have shown faster recovery from sensory and motor block with intrathecal ropivacaine which may contribute to faster recovery of sodium channel from blockade.

To overcome the concerns of drug toxicity and to understand the effect, tolerance, and outcome of these newer local anaesthetic agents in intra-thecal blocks, studies had been conducted in which they compared hyperbaric ropivacaine with hyperbaric bupivacaine and hyperbaric levobupivacaine with hyperbaric bupivacaine in terms of their time of onset, duration of action but only a few comparative studies are available between hyperbaric ropivacaine and hyperbaric levobupivacaine moreover, hyperbaric ropivacaine and hyperbaric levobupivacaine preparations have been recently made commercially available in India.

Therefore, there is a need for a comparative study between hyperbaric levobupivacaine and hyperbaric ropivacaine in patients receiving intrathecal blocks with respect to their time of onset, levels of sensory block, degree of motor block, and time taken to recover from block.

AIMS AND OBJECTIVES

To compare the sensory and motor block characteristics of hyperbaric Levobupivacaine (0.5%) and hyperbaric Ropivacaine (0.75%) in below umbilical surgeries under subarachnoid block in terms of

- Time of onset
- Highest level and duration of sensory and motor block
- Perioperative complications and postoperative analgesia
  24hr postoperative analgesic consumption

REVIEW OF LITERATURE

Spinal anesthesia, or subarachnoid block (SAB), has been a cornerstone of regional anesthesia since its first successful use in surgery by August Bier in 1898. This technique involves injecting local anesthetic into the cerebrospinal fluid (CSF) within the subarachnoid space, providing effective anesthesia for lower limb and abdominal surgeries. The development of spinal anesthesia has significantly advanced, promoting early patient mobility and offering a cost-effective alternative to general anesthesia.

The journey of local anesthesia began with the isolation of cocaine, the first naturally occurring local anesthetic. Initially used for topical anesthesia of the eye and infiltration anesthesia, cocaine's numerous adverse effects led to the development of safer alternatives. Lignocaine (lidocaine) became the preferred anesthetic, but its association with temporary neurological problems when used intrathecally led to its discontinuation in routine practice. Subsequently, bupivacaine, introduced intrathecally by Emblemin in 1966, became the favored drug due to its safety profile. In the 1980s, ropivacaine was introduced, followed by levobupivacaine in the 1990s.

Spinal anesthesia involves injecting a local anesthetic into the subarachnoid space, where CSF circulates around the brain and spinal cord. Adults typically have 130-140 milliliters of CSF, with approximately 500 milliliters produced daily.[20] Proper administration of spinal anesthesia requires a thorough understanding of CNS anatomy and precise needle placement to avoid complications.

The spinal cord extends from the brainstem to the first or second lumbar vertebra. The conus medullaris, the caudal end of the spinal cord, typically resides at the L1 vertebral body.[21] The dural sac, containing CSF, often reaches the S2/3 level. Therefore, spinal needles are usually inserted at the L3/4 or L4/5 interspaces to minimize the risk of spinal cord injury. [22]

Identifying anatomical landmarks is crucial for successful spinal anesthesia. Tuffier's line, drawn between the highest points of both iliac crests, intersects the L4 vertebral body or L4-L5 interspace. The midline can be identified by palpating spinous processes, although spinal abnormalities may complicate this approach.

The spinal needle pierces several structures:

1. Skin - Local anesthesia reduces discomfort during needle insertion.
2. Subcutaneous tissue - Varies in thickness, challenging in obese patients.
3. Supraspinous ligament - Connects tips of spinous processes.
4. Interspinous ligament - Located between spinous processes.
5. Ligamentum flavum - Dense, elastic ligament; penetrating it causes a distinct "giveaway" sensation.
6. Epidural space - Contains adipose tissue and blood vessels; puncture may cause bleeding.
7. Subarachnoid space - Envelops spinal cord and nerve roots in CSF.

Spinal anesthesia blocks three types of nerves: motor, sensory, and autonomic. Motor neurons control muscle contractions; their blockage results in muscle paralysis. Sensory nerves convey tactile and pain sensations; their inhibition allows pain-free surgery. Autonomic nerves regulate involuntary functions; their blockade may cause vasodilation and hypotension.

Practical implications include ensuring patient hydration and establishing an IV line for fluid or vasoconstrictor administration if hypotension occurs. The choice of local anesthetic is as important as the technique itself.

Spinal anesthesia is contraindicated in the following scenarios:

1. Insufficient resuscitative medications and equipment.
2. Clotting disorders - Risk of hematoma formation and spinal cord compression.
3. Hypovolemia - Ensuring hydration or resuscitation is crucial.

4. Patient refusal - Respecting patient autonomy.
5. Noncompliant patients - Assessing compliance, especially in children.
6. Septicemia - Risk of meningitis from infected hematoma.
7. Anatomical malformations - Increased difficulty in dural puncture.
8. Neurological disorders - Elevated intracranial pressure contraindicates spinal anesthesia due to brain stem herniation risk.

Belonging to the family of n-alkyl substitute pipecoloxylidide, levobupivacaine is an amino-amide local anaesthetic medicine. The chemical formula for this compound is [2S]-1-butyl-N-2 6-dimethylphenyl] piperidine-2-carboxamide. A faster protein binding rate is thought to be responsible for levobupivacaine's decreased toxicity. Levobupivacaine acts by temporarily blocking sodium channels in neurons, resulting in its pharmacological effects. The medication attaches to the intracellular segment of sodium channels and inhibits the entry of sodium into nerve cells, hence impeding depolarization. It inhibits the transmission of nerve signals in sensory and motor nerves primarily via interacting with voltage-gated sodium channels on the cell membrane. The levobupivacaine has a pKa value of 8.1, which is comparable to the pKa value of bupivacaine. The decay rate of the substance is such that it takes 3.3 hours for half of it to decay. Alpha1-glycoprotein serves as the primary receptor for levobupivacaine. Levobupivacaine undergoes significant metabolism in vitro through the action of the cytochrome (CYP) CYP3A4 isoform and CYP1A2 isoform, resulting in the formation of inactive metabolites known as des-butyl levobupivacaine and 3-hydroxy levobupivacaine, respectively. In vivo, it seems that 3-hydroxy levobupivacaine undergoes further changes to generate glucuronide and sulphate conjugates, which are then eliminated by urine.[23,24]

Ropivacaine is a type of local anaesthetic that belongs to the category of pipecoloxylidides. It is a long-acting regional anaesthetic. Compared to bupivacaine, which contains a butyl group, ropivacaine has a propyl group

on the piperidine nitrogen atom.[25] Ropivacaine induces reversible suppression of the influx of sodium ions, leading to the blockade of impulse conduction in nerve fibres.[26] This activity is enhanced by the blockage of potassium channels, which depends on the dosage.[27] Ropivacaine exhibits greater hydrophilicity compared to bupivacaine, resulting in its preferential targeting of pain-transmitting A-delta and C nerves rather than Aβ fibres, which are responsible for motor function. This characteristic of ropivacaine contributes to its notably higher threshold for inducing cardio-toxicity and CNS toxicity in healthy individuals, when compared to bupivacaine. The average half-life is around 4.2 hours.[28,29] Ropivacaine undergoes significant hepatic metabolism, mostly through aromatic hydroxylation mediated by cytochrome P450 (CYP) 1A2, resulting in the formation of 3'-hydroxy-ropivacaine. Additionally, it undergoes N-dealkylation catalysed by CYP3A4, leading to the production of 2', 6'-pipecoloxylidide. The kidney is the primary organ responsible for eliminating ropivacaine from the body. After a single intravenous injection, around 86% of the medication is excreted in the urine.[30,31]

Simpson D et al. 2005 studied the effects of ropivacaine in intrathecal blocks, finding it blocks nerve conduction by reversibly inhibiting sodium ion influx in nerve fibers. Its efficacy is comparable to bupivacaine and levobupivacaine for peripheral nerve blocks. Although it is not quite as powerful as bupivacaine when administered intrathecally or epidurally, equivalent doses have been found to be beneficial. Motor block and central nervous system and cardiac toxicity are both decreased with ropivacaine. Less big, myelinated motor fibres may penetrate it, and its lipid solubility is decreased as well. An increased threshold for central nervous system and cardiovascular toxicity is associated with an age-and dose-dependent increase in the degree of motor and sensory block. The analgesic duration is shorter than bupivacaine but adequate for anesthesia, with quicker motor block regression aiding recovery. Adverse

events in ≥5% of patients included hypotension (32%), nausea (17%), vomiting (7%), bradycardia (6%), and headache (5%).[28]

In a 2008 study by **Luck JF et al.** A total of sixty patients, ranging from ASA grade I to II, who were scheduled to have elective spinal anesthesia-based surgery were randomly assigned to receive 3 millilitres of bupivacaine, levobupivacaine, or ropivacaine, with 30 millilitres of glucose added to create a hyperbaric solution. An impartial observer assessed the sensory and motor blocks. Time to restore mobility and urinate, intensity and length of motor block, and duration of sensory (pinprick) block were all recorded in the study. There were no statistically significant differences between the groups when it came to the average start time, spread, or maximum extent of the sensory block beginning at T10. A shorter length at T10 ($P<0.0167$) and overall sensory block duration ($P<0.0167$) revealed that the ropivacaine group experienced a faster regression of the sensory block. In addition to regaining movement sooner, patients in the ropivacaine group recovered from motor block more fast ($P<0.0167$). The groups treated with bupivacaine and the ones treated with levobupivacaine did not vary significantly.[32]

Frawley G et al. 2009 performed research in neonatal spinal anaesthesia utilising the minimum local analgesic concentration model to ascertain the relative efficacy of bupivacaine, levobupivacaine, and ropivacaine, two novel local anaesthetics. The research was carried out in two stages. Phase 1 of the Dixon-Maysey trial determined the lowest effective doses of local analgesics by enrolling 81 infants. Seventy more individuals were a part of Phase 2 to determine the effective doses of spinal anaesthesia using doses in the upper dose-response range. According to the results of the isotonic regression, the estimated ED50 values for ropivacaine, bupivacaine, and levobupivacaine were 0.30 mg/kg, 0.55 mg/kg (0.50-0.64), and 0.50 mg/kg (0.43-0.64), respectively. As for ropivacaine, 0.96 mg/kg (0.73-1.50), levobupivacaine 1.18 mg/kg (1.05-1.22) and bupivacaine 0.96 mg/kg (0.73-1.22). A relative potency ratio of 0.55 for

bupivacaine, 0.61 (0.41-1.00) for bupivacaine, and 1.09 (0.84-1.45) for levobupivacaine were recorded at the ED50. The relative effectiveness and optimal dosages of these local anaesthetics for spinal anaesthesia in neonates are illuminated by this research.[33]

In a rigorous study by **Lee YY et al**., 2009 Intrathecal bupivacaine, levobupivacaine, or ropivacaine were given to 75 patients at random during lower limb surgery that was to be done under combined spinal-epidural anaesthesia. The first dose for each group was 8 mg, with a 1 mg escalation depending on the success or failure of spinal anaesthesia in the previous patient. This dosing strategy was based on an up-down sequential allocation. Within 20 minutes, both T12 sensory blocks to cold were achieved, and the procedure could be sustained for 50 minutes without the need for additional epidural injection; this was considered a success.Using Dixon and Massey's technique, the study painstakingly determined the effective dose for 50% of patients (ED50). Based on the results, the ED50 values for ropivacaine were 8.41 mg, levobupivacaine was 5.68 mg, and bupivacaine was 5.50 mg. Relative anaesthetic potency ratios for levobupivacaine/bupivacaine were found to be 0.97, ropivacaine/bupivacaine to be 0.65, and ropivacaine/levobupivacaine to be 0.68 in this study. This study underscores the nuanced differences in potency and efficacy among these local anaesthetics, highlighting that while levobupivacaine is almost equipotent to bupivacaine, ropivacaine requires a higher dose to achieve comparable anaesthetic effects. Such findings are crucial for clinicians in tailoring anaesthesia plans to optimize patient outcomes while considering the specific pharmacological profiles of these agents.[34]

Sagir O et al. 2013 analysed the performance of the block, satisfaction among patients, and delay to discharge after unilateral spinal anaesthesia for arthroscopic knee surgery using hyperbaric levobupivacaine vs bupivacaine. A total of 122 patients who were scheduled for elective ambulatory knee arthroscopy and were classified as either

anesthesiologists I or II were divided into four groups using a random assignment system. In order to accomplish a unilateral spinal block, the following dosages were administered intrathecally: 5 mg of hyperbaric bupivacaine plus 20 µg of fentanyl to Group BF, 5 mg of hyperbaric levobupivacaine plus 20 µg of fentanyl to Group LF, 5 mg of hyperbaric bupivacaine to Group B, and 5 mg of hyperbaric levobupivacaine to Group L. The patient's sensory block level and duration, motor block intensity and duration, time to first analgesic requirement, and time to discharge were all noted. We also took note of hemodynamic readings and any side effects. In Group L, it took 7(3-20) minutes to achieve the T12 dermatome level, but in Group B, it took 6(3-12) minutes. ($P = 0.006$). There was a significant difference between Group BF and Group B in terms of the maximal sensory level reached on the side that had the procedure ($P < 0.05$). Group BF had a more severe motor blockage compared to Groups LF and L. Compared to Group BF, which took 115 (60-180) minutes to recover from motor blockage, Groups LF and L took 75 (45-165) and 63 (35-120) minutes, respectively. ($P < 0.05$). Group L (154 ± 50) required less time for the sensory block to regress to the S2 level compared to Group BF (192 ± 66) ($P < 0.05$). Compared to Groups BF, LF, and B, Group L's block quality was substantially worse. Groups L (110 ± 48) had a substantially shorter time elapsed until the Visual Analogue Scale > 4 compared to Groups BF (200 ± 60), LF (156 ± 61), and B (162 ± 52) ($P < 0.05$). Groups B and L had shorter times until patients were discharged (244 ± 54 and 229 ± 55, respectively) compared to Group BF (288 ± 64). With the exception of pruritus, there were no variations in hemodynamic parameters or adverse events across the groups. Groups BF and LF had much higher rates of pruritus compared to the other groups. Finally, compared to 5 mg of hyperbaric levobupivacaine alone, a combination of 5 mg of hyperbaric bupivacaine and 5 mg of hyperbaric levobupivacaine with 20 µg of fentanyl produced a superior spinal anaesthesia.[35]

Outpatient knee arthroscopic procedures were the focus of a prospective, randomised, double-blind trial conducted by **Vani S** et al. in 2015. The researchers examined the effectiveness of intrathecal 0.5% hyperbaric bupivacaine, 0.5% isobaric levobupivacaine, and 0.5% isobaric ropivacaine, all mixed with fentanyl. Group BF received 10 mg of hyperbaric bupivacaine, Group LF received 10 mg of isobaric levobupivacaine, and Group RF received 10 mg of isobaric ropivacaine; the sixty patients enrolled in the study ranged in age from 18 to 60. The total intrathecal volume across all groups was 2.5 ml, as each patient also received 25 µg fentanyl. Characteristics of sensory and motor blocks, time to ambulation, and discharge were all carefully documented in the study. Significantly lower (10.10 ± 3.63 hours) mean time to ambulation was seen in Group RF compared to Group BF (14.80 ± 3.63 hours) and Group LF (12.40 ± 2.30 hours), with a p-value of less than 0.001. Also, with a $p<0.001$, Group RF had a substantially shorter mean time to complete motor recovery (204.75 ± 34.39 minutes) compared to Group BF (260 ± 40.78 minutes) and Group LF (280.25 ± 28.72 minutes). The duration of the subarachnoid block was similar across all groups ($p=0.522$).[36]

In a 2015 study by **Dar FA et al.,** the efficacy of 0.5% hyperbaric ropivacaine and 0.5% hyperbaric bupivacaine was compared in patients undergoing lower limb or hip surgery. Each patient received a spinal injection of either 3 ml (15 mg) of ropivacaine or bupivacaine. While both anaesthetics provided excellent anaesthesia quality, ropivacaine resulted in a longer onset of the sensory and motor block but a shorter duration of these blocks compared to bupivacaine. Ephedrine needs were similar in both groups; however, hypotension occurred significantly less with ropivacaine (19%) compared to bupivacaine (66%). These findings support the use of intrathecal ropivacaine for high-quality anaesthesia with a reduced incidence of hypotension, despite its shorter duration of action compared to bupivacaine.[37]

Athar M et al. 2016 examined the features and effectiveness of intrathecal levobupivacaine and ropivacaine at equipotent dosages. For lower limb orthopaedic surgery under spinal anaesthesia, sixty patients with ASA grade I or II were randomly given either 15 or 22.5 milligrammes of levobupivacaine. They measured hemodynamic parameters, side effects, sensory block onset, and motor block onset. In comparison to group L (levobupivacaine), group R (ropivacaine) exhibited a noticeably quicker start of sensory block to T10 ($p < 0.0001$). Group L had a median height of T7 (T4-T10) and group R had a median height of T7 (T5-T10). The time it took for group R to reach their maximum height and Bromage grade 3 was significantly shorter ($p < 0.0001$). In comparison to ropivacaine, levobupivacaine caused a longer duration of the motor block (290.50 ± 34.67) and a longer duration of analgesia in group L (309.83 ± 36.45) than in group R (249.50 ± 22.83). We did not get any reports of major side effects. At a 0.6:1 ratio, levobupivacaine offers far longer analgesia than ropivacaine; however, ropivacaine is better suited for procedures that have a low hypotension threshold due to its effectiveness, safety profile, and hemodynamic stability.[38]

Spinal anaesthesia with 0.5% hyperbaric levobupivacaine or 0.5% hyperbaric bupivacaine was compared to the effects of both in a 2018 research by **Girish B.K. et al.** for patients having elective below-umbilical procedures. Two equal groups were randomly assigned to sixty patients with ASA I and II, ranging in age from eighteen to seventy, who were scheduled for elective lower limb procedures. Intrathecal hyperbaric 0.5% levobupivacaine, prepared by mixing 3 ml of levobupivacaine with 0.5 ml of 50% dextrose, was administered to Group L in a volume of 3.5 ml. The second group was given 3.5 millilitres (15 milligrammes) of intrathecal hyperbaric 0.5% bupivacaine mixed with half a millilitre of normal saline. Both groups had a comparable start to sensory blockage. In contrast to Group B, however, Group L's intraoperative anaesthesia was of lower quality, and the motor blockade was milder and took longer to take effect.

The groups were similar with respect to the duration of motor blockade, the time required for two-segment regression, the level and maximum upper spread of sensory blockade, and so on. The analgesic effect wore off faster in Group L.Although hyperbaric 0.5% bupivacaine is still the gold standard for spinal anaesthesia in elective surgeries, the study found that hyperbaric 0.5% levobupivacaine worked just as well and had a shorter duration of action, making it a good alternative for outpatient spinal anaesthesia and shorter procedures.[39]

Patel AM et al. 2018 conducted a prospective, randomized double-blind study comparing intrathecal 0.75% ropivacaine and 0.5% levobupivacaine for lower limb surgery in 68 ASA I-III patients. Group L (levobupivacaine) showed faster onset and longer duration of sensory and motor block with shorter motor regression time, promoting easier postoperative mobilization. Additionally, Group L exhibited superior hemodynamic stability, longer time to first rescue analgesia, and higher levels of patient and surgeon satisfaction regarding surgical anaesthesia compared to Group R (ropivacaine). Both local anaesthetics demonstrated effective blockade properties, but levobupivacaine proved advantageous in terms of onset, duration, postoperative analgesia, and overall satisfaction, suggesting it as a preferable choice for spinal anaesthesia in lower limb surgeries.[40]

Govindarao D et al. 2018 evaluated the effectiveness of Ropivacaine and Levobupivacaine as spinal anaesthetics for lower limb orthopaedic procedures. 60 adults with ASA classes I and II who were admitted for elective lower limb orthopaedic procedures were randomly assigned to two groups, with 30 patients in each. Group L patients received 3 millilitres of 0.5% Levobupivacaine (15 mg) for spinal anaesthesia, while Group R patients received 3 millilitres of 0.5% Ropivacaine (15 mg). Analgesia, motor blockage, hemodynamic parameters, and other features of spinal anaesthesia were noted, as were any side consequences. We used appropriate statistical techniques to gather and assess the data we

obtained. Compared to Group R, which took 9.43 and 3.10 minutes, respectively, to experience sensory and motor block, Group L had a far faster onset (7 and 1.87 minutes). Group L reached its greatest analgesic effect after 12.67 minutes, while Group R took 16.67 minutes. Compared to Group L, which had a two-segment regression time and analgesia duration of 103.6 and 251.33 minutes, respectively, Group R had a much lower duration of 72.63 and 213.93 minutes. Group L reached a higher grade of motor blockage more quickly (9.03 mins) than Group R (12.63 min). Recovery from motor obstruction occurred earlier in Group R (151.17 mins) compared to Group L (263.67 mins) on average. There were no negative side effects and both groups' hemodynamics were steady. For orthopaedic procedures involving the lower limbs, intrathecal isobaric levofloxacin and ropivacaine, both 15 mg, are efficacious without causing major changes to hemodynamics. When compared to Ropivacaine, Levobupivacaine resulted in a more rapid start, a longer duration, and a stronger sensory block, as well as a longer duration of motor blockade.[41]

Kamath S et al. 2018 studied the effects of levobupivacaine and ropivacaine on spinal anaesthesia, specifically looking at how the two drugs affected the onset, duration, and regression of motor and sensory blockage. One hundred patients participated in this prospective randomised double-blind trial; fifty patients were assigned at random to each of the two groups. A 2.5 ml mixture of ropivacaine and 0.5 ml of fentanyl was administered to the second group for spinal anaesthesia, whereas 2.5 ml of levobupivacaine and 0.5 ml of fentanyl were administered to the first group. The onset of motor and sensory blockade was delayed in the levobupivacaine-fentanyl group. The motor and sensory blockade was more rapidly initiated and cleared up in the ropivacaine-fentanyl group. Because of its quicker start of action, early regression of blockade, and higher success rate, ropivacaine-fentanyl

combination is preferable to levobupivacaine-fentanyl combination for usage in brief surgical procedures.[42]

Soni P et al 2019 examined The clinical efficacy and block properties of isobaric forms of levobupivacaine and ropivacaine with fentanyl. For this prospective, single-blind trial, sixty patients (ranging in age from 20 to 65 years) with an ASA grade of I or II, regardless of gender, were assigned to receive either 3 ml of 0.5% Levobupivacaine or 0.75 ml of Ropivacaine with 25 µg of Fentanyl during their lower abdomen or lower extremities surgery. We documented the characteristics of the intraoperative and postoperative blocks, hemodynamic indices, and side effects. The LF group reached T10 sensory level and bromage 1 earlier than the RF group (p = 0.001). Group RF's peak sensory level was T8–T10, while group LF's was T6–T8. In comparison to group RF, which had sensory and motor blocks for 228 ± 4.16 and 195.33 ± 3.54 minutes, respectively, group LF had noticeably longer durations of block. Group RF had a substantially shorter time to initial rescue analgesia (258 ± 4.32 min) compared to group LF (p value = 0.001). Anaesthesia was provided satisfactorily with minimum hemodynamic fluctuation using equal dosages of isobaric Ropivacaine and Levobupivacaine with 25µg of Fentanyl. Optimal for outpatient procedures, Levobupivacaine has a quick start and lasts a long time under anaesthesia, whereas Ropivacaine allows for early mobility once a sensory and motor block has been applied.[43]

Garaniya RR et al. (2023) examined the pros and cons of using intrathecal hyperbaric ropivacaine vs hyperbaric bupivacaine for lower abdominal procedures. Three millilitres of 0.75% ropivacaine was administered to Group R, while three millilitres of 0.5% bupivacaine was administered to Group B, to sixty patients ranging in age from eighteen to sixty-five years old and with ASA I-II. They looked at things like side effects, degree of relaxation, sensory and motor block features, and hemodynamic parameters. Between ten and thirty minutes after induction, Group B's mean arterial blood pressure dropped considerably. Group B

had a peak block period of 10.03±1.22 minutes, while Group R had a lengthier beginning of sensory block at 14.2±1.51 minutes. The sensory block lasted less time in Group R (160.5±41 min) compared to Group B (196.6±40 min), and the motor block lasted less time in Group R (124.3±32.3 min) compared to 160.5±36.4 min in Group B. The quality of muscle relaxation was comparable in the two groups. Hence, similar to bupivacaine, hyperbaric ropivacaine stabilises hemodynamics, speeds recovery, and relaxes muscles.[44]

Rathod S et al. 2023 studied the effects of intrathecal isobaric 0.5% ropivacainefentanyl and isobaric 0.5% levobupivacaine-fentanyl on anaesthesia and pain during lower limb procedures. Patients with ASA I and II, ranging in age from 18 to 60 years, participated in this interventional trial that was designed to be prospective and randomised. Group A (n=30) and Inj. received 2.5 ml of isobaric ropivacaine (0.5%) injections along with 0.5 ml of fentanyl (25 µg) administered intrathecally. In group B (n=30), 2.5 ml of isobaric levobupivacaine (0.5%) was administered intrathecally with 0.5 ml of injectable fentanyl (25 µg). Group assignments were made using the sealed envelope technique. Data on hemodynamics and demographics were similar between the two groups. A statistically significant difference was seen between the groups treated with ropivacaine and levobupivacaine with respect to the time it took for sensory and motor block to take effect. (Value of p = 0.008). Compared to the levobupivacaine + fentanyl group, the ropivacaine group had shorter durations of sensory and motor blocks. When comparing the two groups, the time it takes to get the first dosage of rescue analgesic is significantly different. When compared to levobupivacaine, they found that 2.5 ml of 0.5% ropivacaine with 0.5 ml of fentanyl (25 micrograms) was more effective in facilitating early ambulation and might be utilised in day-care lower limb procedures.[45]

MATERIALS AND METHODS

SOURCE OF DATA

A prospective, randomized, interventional, double-blind study was conducted in the Department of Anaesthesiology, Dayanand Medical College and Hospital, Ludhiana after approval from the Institutional Ethics Committee on adult patients posted for below umbilicus surgeries under subarachnoid block. A written informed consent was obtained from all patients selected for surgery.

METHOD OF COLLECTION OF DATA

INCLUSION CRITERION

Healthy individuals of either sex, age more than 18 years with American Society of Anaesthesiologists (ASA) physical status I, II scheduled for elective surgery.

EXCLUSION CRITERION

1. Age <18 years
2. Patients of ASA grade all or more
3. Patients allergic to local anaesthetic agents
4. Patients with coagulopathies and thrombocytopenia
5. Patients with hypovolemia and hypotension
6. Patients with increased intra-cranial tension
7. Patients with infections at the site of drug administration
8. Patients with spinal deformities
9. Patient's refusal of consent

GROUP ALLOCATION

A prospective, randomized, double-blind study was conducted on ASA I and II adults. A total of 70 patients were recruited for the study and they were randomized into two groups of 35 patients each, using computer-generated random numbers contained in sealed, sequentially numbered envelopes, which were opened by an independent anaesthesiologist for preparation of the study drug. Depending upon the nature of the study drug patients were grouped as follows:

- **Group (R):** Subjects received 3ml of 0.75% of hyperbaric ropivacaine intrathecally.
- **Group (L):** Subjects received 3ml of 0.5% of hyperbaric levobupivacaine intrathecally.

METHODOLOGY AND ANAESTHESIA TECHNIQUE

Anaesthesia Technique – All patients were subjected to routine preoperative assessment and standard fasting protocols. On shifting to the OR, monitors were attached to the patient to assess the patient's blood pressure; continuous EKG, continuous pulse oximetry, and baseline values were recorded. Intravenous access was established and intravenous fluid administration was started before starting the procedure of spinal anaesthesia. The anaesthesia provider ensured all aseptic preparations and all contents of the spinal kit.

With the patient positioned in the sitting posture, he/she was asked to maintain a flexed spine position to help open up the interspace. The back of the spine was cleaned with 10%w/v povidone-iodine solution in 3 layers starting from the inferior border of the scapula up to the superior iliac crest and the provider waited for 3 minutes for its action, then the area was cleaned with chlorhexidine solution containing alcohol and afterward the area was cleaned and dried with a sterile gauge. An area was draped exposing L1 – L5 vertebrae and a suitable space was palpated with the help of Tuffier’s line and 2ml lignocaine 2% was injected in the space to raise a wheel after negative aspiration of blood.

A 26G quincke spinal needle was inserted in the space in the midline and was directed cranially, the bevel of the needle was kept parallel to the longitudinal axis of the spine. The needle was advanced till it punctured the arachnoid membrane. Stylet was withdrawn to observe the free flow of CSF. A 5ml syringe containing the study drug was attached and the drug was administered at the rate of approximately 0.2ml/sec and the case timer was started.

Group allocation and blinding Technique: Depending upon the nature of the study drug to be administered, a computer-generated random number list of participants divided into 2 groups of 35 participants each was prepared. Under all aseptic precautions, 3 ml of the study drug (0.5% hyperbaric Levobupivacaine or 0.75% hyperbaric Ropivacaine), was loaded in a code labeled 5 ml syringe by an anaesthesia resident who was not a part of further study. This drug-loaded syringe was handed over to the attending anaesthesiologist for further administration. Unaware of the administered drug, the attending anaesthesiologist was responsible for the conduct of spinal anaesthesia and further intraoperative and postoperative management and observations. The drug codes were decoded after the completion of the study.

INTRAOPERATIVE OBSERVATIONS:

Vital Signs: The patient's Heart rate, Systolic Blood pressure, Diastolic blood pressure, Mean arterial pressure, saturation, and respiratory rate were observed every 2 minutes for the first 10 minutes after the subarachnoid blockade and then every 5-minute intervals for the next 20 minutes and every 10 minutes after that.

After the subarachnoid block, patients were monitored for common side effects like hypotension, bradycardia, desaturation, respiratory depression, etc., and appropriately managed.

- Hypotension was defined as a drop in systolic blood pressure of more than 20% from baseline (or) systolic BP of less than 90 mm of Hg. It was managed with Inj. Ephedrine intravenously in increments of 6 mg, rapid IV fluid infusion, and oxygen supplementation, as necessary.
- Bradycardia was defined as a heart rate of <60/min and managed with Inj. Atropine 0.6 mg IV.
- Respiratory depression was defined as a respiratory rate of <8/min and/or oxygen saturation of <85% and it was managed with oxygen

supplementation, bag and mask ventilation, or endotracheal intubation and IPPV as appropriate.

Sensory Block Assessment: The patient was assessed for the level of sensory blockade using the pinprick method with a blunt pin placed in mid clavicular line on either side. Level of sensory blockade was noted every 2 minutes for the initial 10 minutes then every 5 minutes till 30 minutes and every 15 minutes thereafter. Sensory block characteristics were assessed as follows:

1. Time of onset (Time taken to attain T8 dermatome level sensory loss).
2. Time to the highest level of Sensory block.
3. Duration of block. (Time of regression up to T12 dermatomal level)

The surgery was allowed to commence after the sensory block had reached T8.

Motor Block Assessment: The degree of motor block in the lower limbs was assessed using a Modified Bromage Scale (MBS) every 2 minutes for the initial 10 minutes and then every 5 minutes till 30 minutes and every 15 minutes thereafter. Motor block characteristics were assessed as follows:

1. Onset of motor block (unable to flex knee Bromage 2)
2. Time to achieve the highest degree of motor block.
3. Duration of motor block. (Time of regression to Bromage score 0 from time of giving intrathecal block)

MODIFIED BROMAGE SCALE

0 =able to raise straight leg against resistance i.e., no detectable motor block.

1=unable to raise straight leg but able to flex the knee.

2=unable to flex knee but able to flex ankles.

3= unable to move hip, knee or ankle

POSTOPERATIVE ASSESSMENT

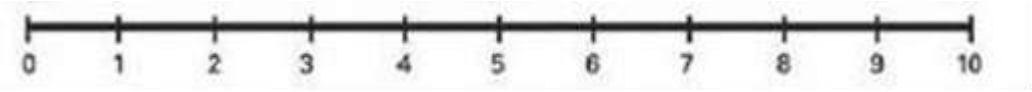
Upon shifting the patient to the post-anaesthesia care unit, the HR, MAP, SBP, DBP, SpO2, level of the sensory block, and degree of the motor

block of the patient were assessed and recorded at 0 min (baseline), and then every 15 minutes till complete sensory and motor block regression was achieved.

Duration of postoperative analgesia: After shifting to the recovery room a baseline pain assessment was done using the Visual Analogue Scale (VAS) – a 10-point scale wherein 0 indicates no pain and a score of 10 indicates worst imaginable pain and then a regular pain assessment was done every 1 hourly. As a standard postoperative analgesia protocol, each patient was given an inj. Paracetamol infusion 1gm (15mg/kg) at the time of recovery from sensory and motor blockade. Duration of postoperative analgesia was defined as the period from the time of giving the spinal block to the time for the first request for rescue analgesia by the patient or when VAS was more than 4. Inj. Tramadol 50mg IV was given and patients was reassessed for VAS after 30 minutes. If VAS was still more than 4, Inj. Tramadol 50mg IV was repeated till VAS was <4 or till up to 100mg tramadol in the last 6 hours or 400mg in the last 24 hours. The total dose of Tramadol consumed in 24 hours was recorded

Visual Analog Score

No pain **Worst pain**



Patients with failed spinal anaesthesia and subsequent conversion to general anaesthesia were excluded from the study.

OUTCOMES OF THE STUDY

PRIMARY OUTCOME:

- To compare Sensory and motor block characteristics of 0.5% hyperbaric levobupivacaine and 0.75% hyperbaric ropivacaine under subarachnoid block in terms of:
    - Time of onset of sensory and motor block
    - Highest level of sensory block and degree of motor block
    - Duration of sensory and motor block

SECONDARY OUTCOME:

- Duration of postoperative analgesia
- Postoperative 24-hour analgesic consumption
- Perioperative complications

STATISTICAL ANALYSIS

Data were presented using the following formats: range, median, frequencies, number of cases, and relative frequencies, if applicable: mean ± standard deviation (± SD), IQR, and percentages. The data were checked for normality using a Kolmogorov-Smirnov test. We used the student t-test for parametric data and the Mann-Whitney U test for non-parametric data to compare quantitative factors across the research groups. The Fisher exact test was utilised when the anticipated frequency was less than 5, and the Chi-square ($\chi 2$) test was executed for comparing categorical data. For statistical purposes, a p-value less than 0.05 was deemed significant. We used the Windows version of the statistical programme SPSS 21.0 (Statistical Package for the Social Science, SPSS Inc., Chicago, IL, USA) to complete all of our statistical calculations.

OBSERVATIONS AND RESULTS

This prospective, randomized trial was conducted on 70 patients who were randomized into two groups: Group R (Ropivacaine) and Group L (Levobupivacaine).

Figure 1. Consort flow diagram of the study

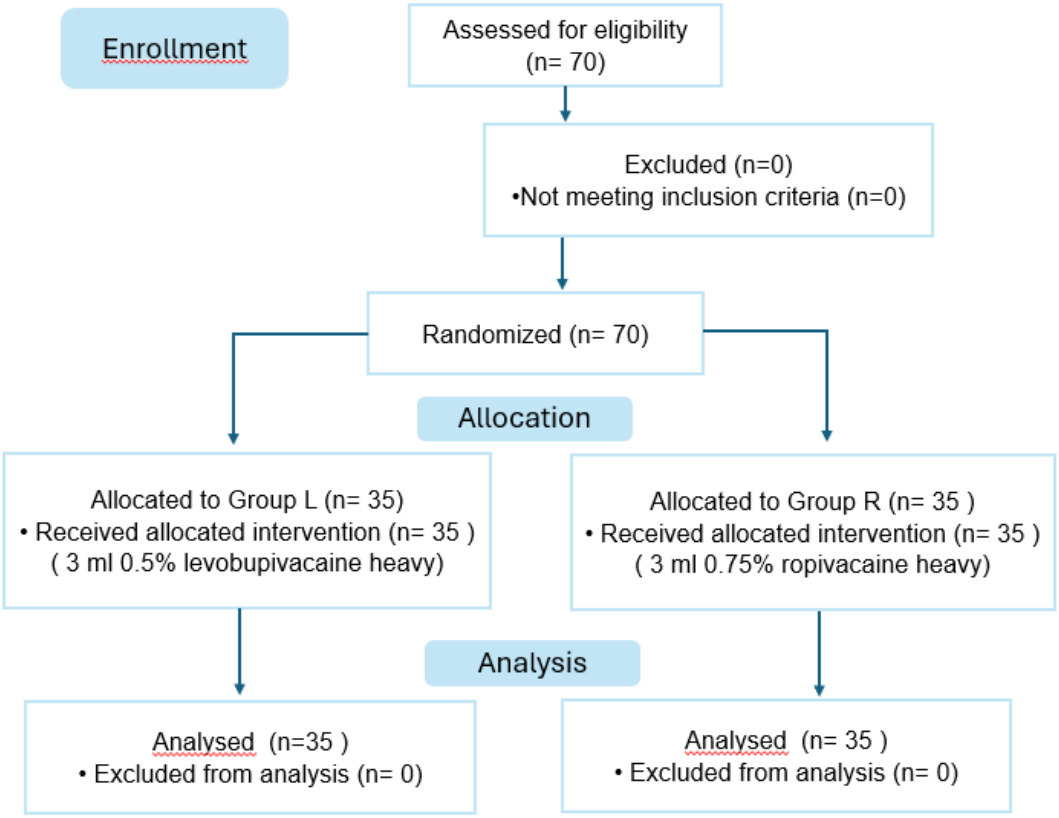

Enrollment
Assessed for eligibility (n= 70)
Excluded (n=0)
•Not meeting inclusion criteria (n=0)
Randomized (n= 70)
Allocation
Allocated to Group L (n= 35)
• Received allocated intervention (n= 35)
(3 ml 0.5% levobupivacaine heavy)
Allocated to Group R (n= 35)
• Received allocated intervention (n= 35)
(3 ml 0.75% ropivacaine heavy)
Analysis
Analysed (n=35)
• Excluded from analysis (n= 0)
Analysed (n= 35)
• Excluded from analysis (n= 0)

Table1: Distribution of subjects according to age, weight, height, BMI and sex

	Group R		Group L		t	p-value
	Mean	SD	Mean	SD		
AGE	39.49	15.52	37.94	15.84	0.412	0.682
HEIGHT	168.86	6.39	166.74	5.63	1.469	0.146
WEIGHT	72.26	12.97	73.13	14.24	-0.268	0.790
BMI	24.35	4.24	25.11	4.66	-0.722	0.473

		Group R		Group L		Total	Chi-square value	p-value
		No. of cases	% age	No. of cases	% age			
SEX	F	4	11.4%	11	31.4%	15	4.158	0.078
	M	31	88.6%	24	68.6%	55		
Total		35	100.0%	35	100.0%	70		

- Both groups were comparable in terms of demographic profile. The mean age in group R was 39.49 ± 15.52 years and in group L 37.94 ± 15.84 years (Fig 2.1). The mean height in group R was 168.86 ± 6.39 cms and in group L was 166.74 ± 5.63 cms whereas, the mean weight in group R was 72.26 ± 12.97 kgs and in group L was 73.13 ± 14.24 kgs. The mean BMI in group R was 24.35 ± 4.24 kg/m^2 and in group L was 25.11 ± 4.66 kg/m^2 (Fig 2.2).
- Gender-based distribution showed a higher number of male subjects enrolled than female subjects in both groups where, group R had 88.6% male subjects and 11.4% percent female subjects whereas, group L had 68.6 % male subjects and 31.4 % female subjects (Fig 2.3). The comparative outcome was statistically insignificant (p =0.078)

Figure 2.1: Distribution of subjects according to age

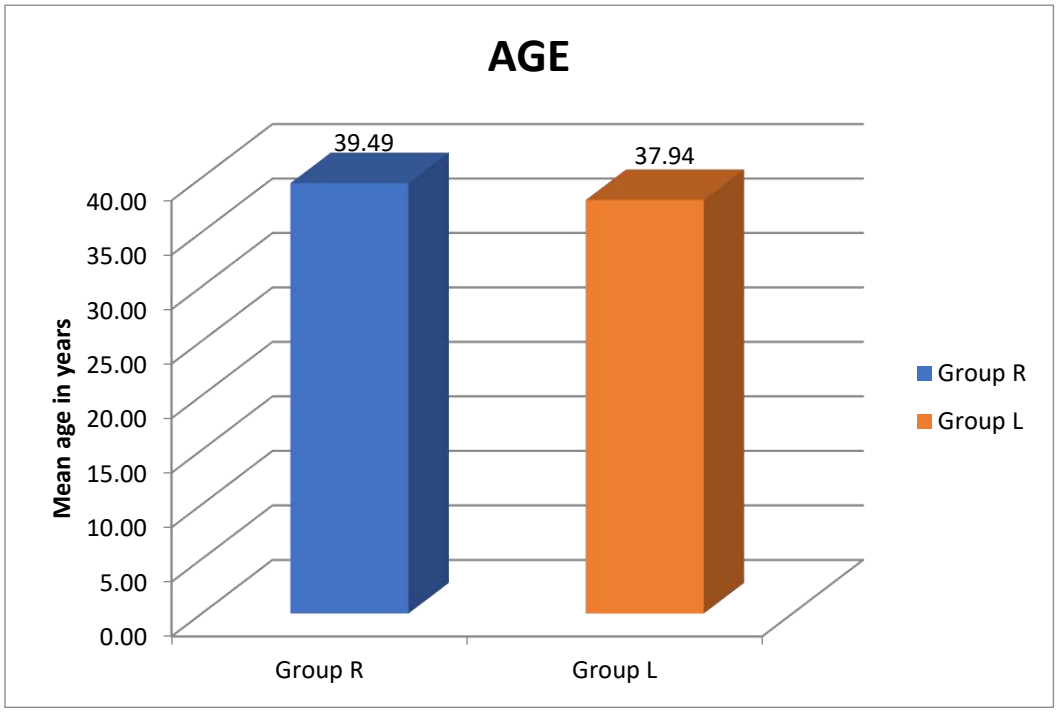


Figure 2.2: Distribution of subjects according to height, weight and BMI

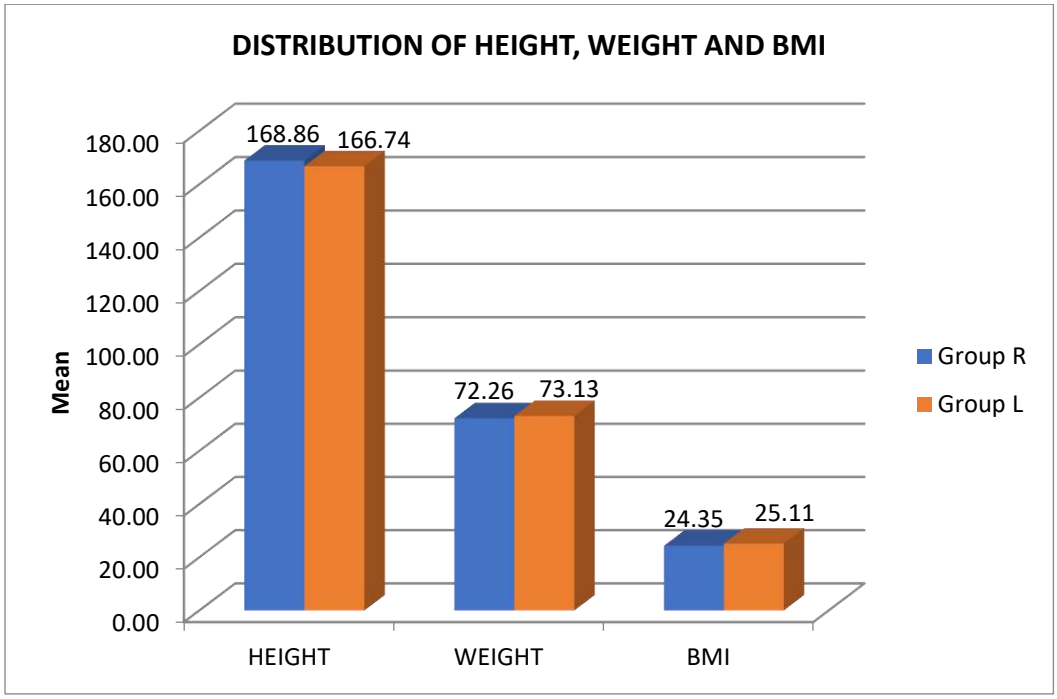


FIGURE 2.3 DISTRIBUTION OF SUBJECTS ACCORDING TO SEX

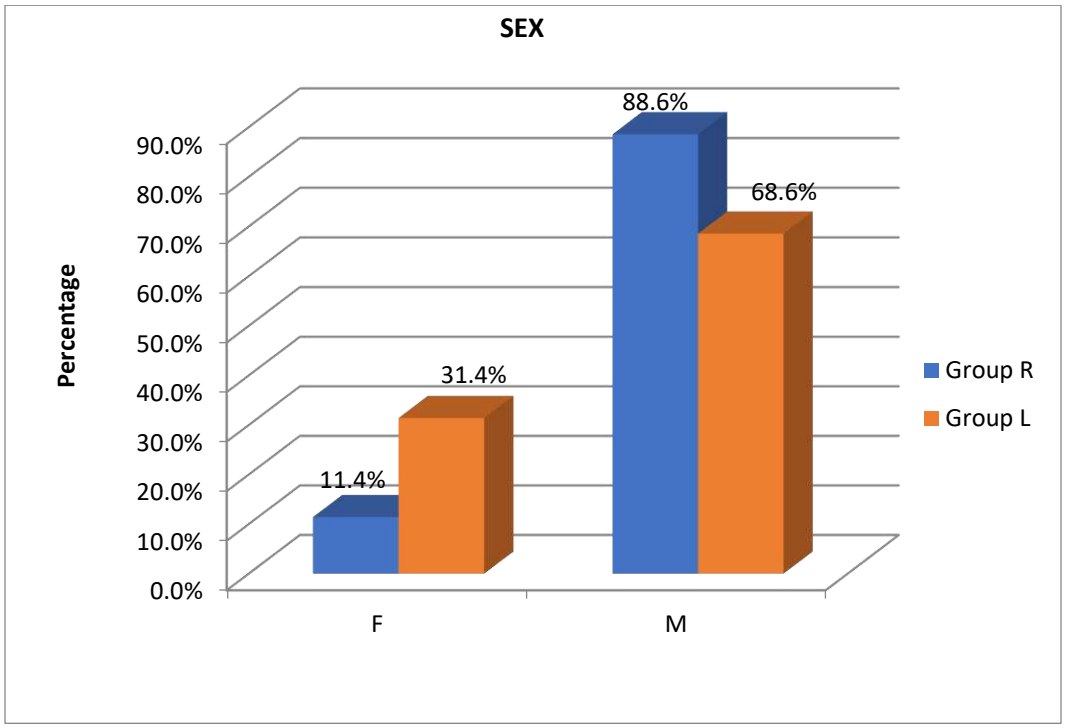


TABLE 2. DISTRIBUTION OF SUBJECTS ACCORDING TO ASA PHYSICAL STATUS GRADING

		Group R		Group L		Total	Chi-square value	p-value
		No. of cases	% age	No. of cases	% age			
ASA GRADE	I	13	37.1%	14	40.0%	27	0.06	0.806
	II	22	62.9%	21	60.0%	43		
Total		35	100.0%	35	100.0%	70		

- In our study, we enrolled patients with ASA physical status grade I and II.Table 2. shows that the number of patients enrolled with ASA physical status grade I & II in both groups were statistically comparable (p=0.806) where, groups R and L had 37.1% and 40.0% individuals with ASA grade I respectively, whereas, groups R and L had 62.9 % and 60.0 % individuals with ASA grade II respectively (Fig 3).

Figure 3: Distribution of subjects according to ASA physical status grading.

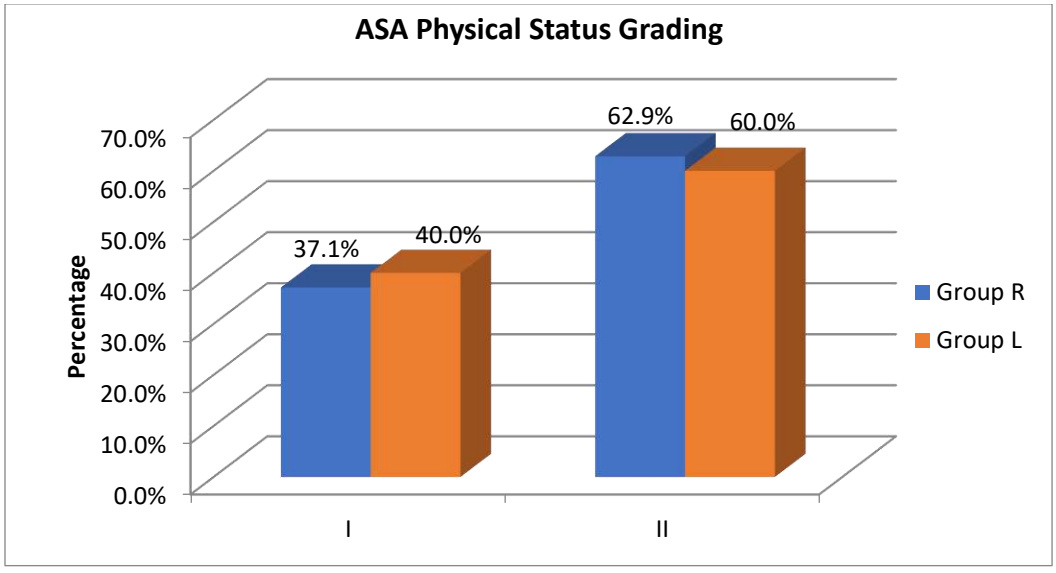


TABLE 3: Comparison of study groups according to intraoperative sensory block onset

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME OF ONSET OF SENSORY BLOCK	4.69	1.08	3.66	0.76	4.603	**0.001**

- In our study, the onset of sensory block intraoperatively was taken at the T8 dermatome level.
- A statistically significant difference in the onset of sensory block among both groups was seen at time points of 4 minutes and 6 minutes
- At 4 minutes 62.9 % of subjects of the R group and 82.9% of the L group attained sensory level T8 blockage with a statistically significant difference (p= 0.001)
- At 6 minutes 48.6 % of subjects of group R and 5.7 % of subjects of group L attained sensory level T8 blockage with a statistically significant difference (p = 0.001)
- The above findings infer that group L subjects had a faster onset of the sensory block than group R subjects as shown in Table 3.
- There was a statistically significant difference (p= 0.0010) in the time of onset of sensory blockage between both groups where group L had a significantly faster time of onset of sensory blockage (3.66 ± 0.76 minutes) than group R (4.69 ± 1.08 minutes).

Figure 4.1: Comparison of study groups according to intraoperative sensory block onset

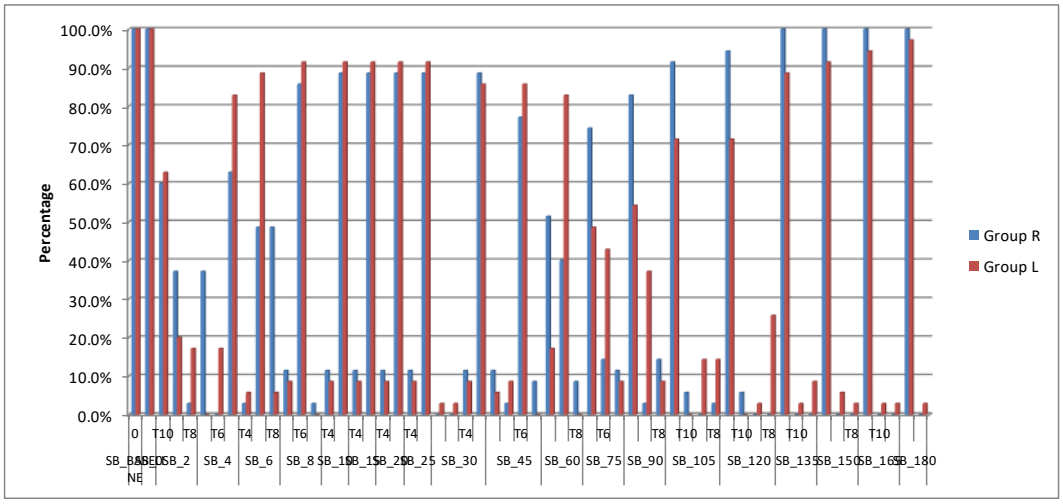


FIGURE 4.2: **Comparison of study groups according to intraoperative sensory block onset in minutes.**

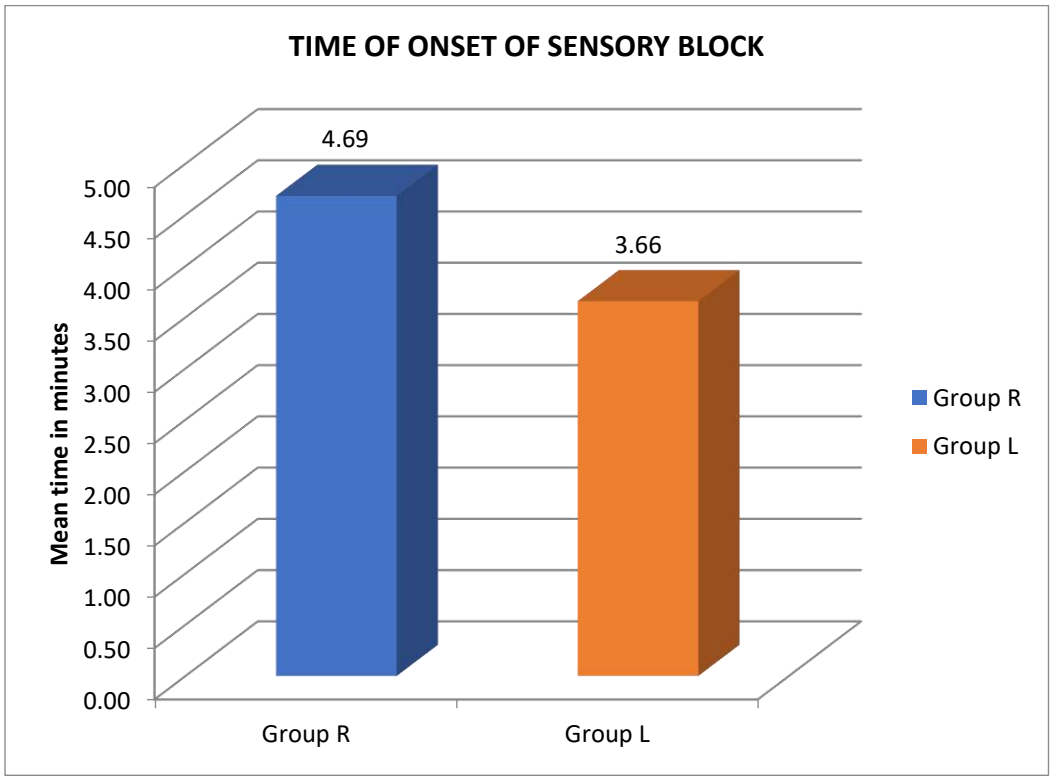


Table 4: Comparison of study groups according to the maximum sensory level achieved intraoperatively.

		Group R		Group L		Total	Chi-square value	p-value
		No. of cases	%age	No. of cases	%age			
MAX. SENSORY LEVEL ACHIEVED	T4	2	5.7%	3	8.6%	5	0.215	0.643
	T6	33	94.3%	32	91.4%	65		
Total		35	100.0%	35	100.0%	70		

Table 4 shows the maximum level of sensory blockage achieved in subjects after spinal anaesthesia was T4 in 5.71 % of subjects in group R and 8.6 % of subjects in group L whereas, it was T6 in 94.3 % in group R and 91.4% in group L individuals. Findings were statistically comparable in both groups (p=0.643)

Figure 5: Comparison of study groups according to the maximum sensory level achieved intraoperatively

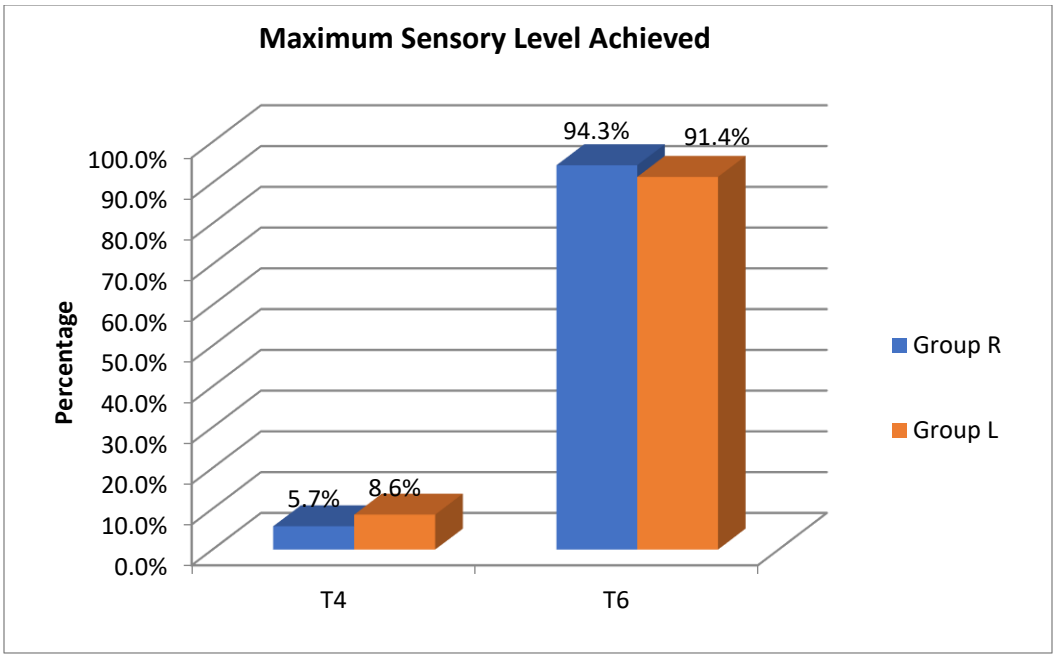


Table 5: Comparison of study groups according to time to reach maximum sensory level

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME TO REACH PEAK SENSORY LEVEL	7.20	1.11	5.89	0.96	5.301	**0.001**

Time to reach peak sensory level was also lesser in group L (5.89 ± 0.96 minutes) than in group R (7.20 ± 1.11 minutes) and the difference was statistically significant (p= 0.001).

Figure 6: Comparison of study groups according to time to reach maximum sensory level

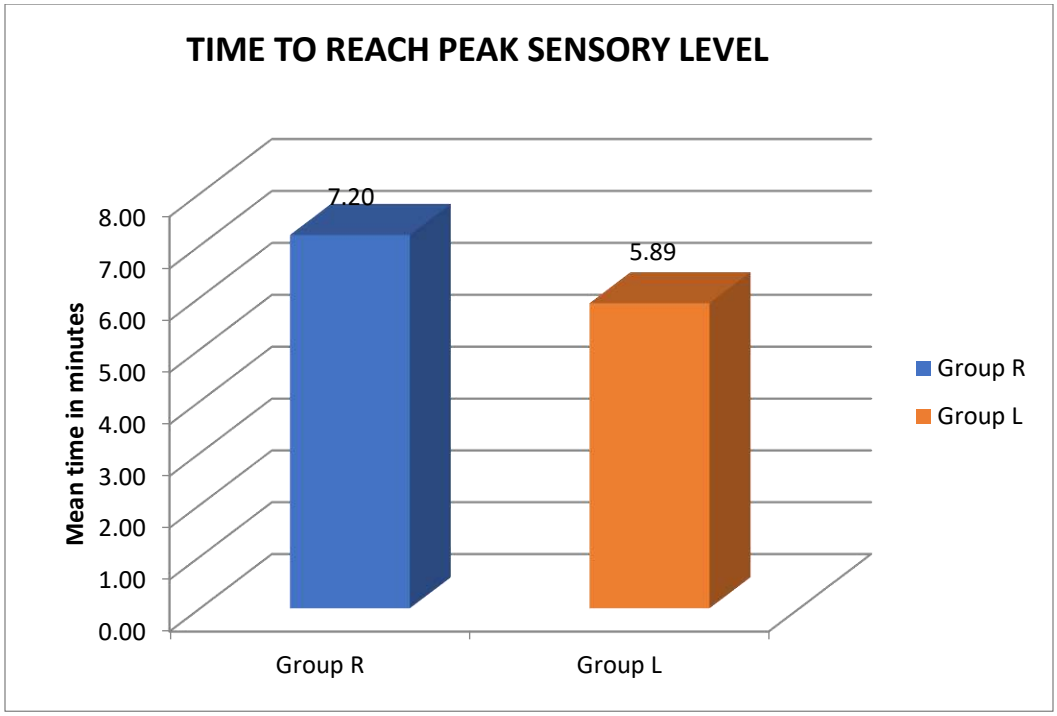


Table 6: Comparison of study groups according to intraoperative onset of motor block

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME OF ONSET OF MOTOR BLOCK	2.46	0.85	2.11	0.47	2.083	0.041

In our study, we took the Modified Bromage Scale II as the onset of motor block. At a time point of 2 minutes, 71.4 % of the total subjects of group R attained motor blockage up to MBS II and 5.7 % of subjects attained up to MBS III whereas, 62.9 % of the total subjects of group L attained motor blockage up to MBS II and 31.7 % of subjects attained up to MBS III. (Fig 7.1) At a time point of 4 minutes, 45.7 % of the total subjects of group R attained motor blockage up to MBS II and 54.3 % of subjects attained up to MBS III whereas, 2.9 % of the total subjects of group L attained motor blockage up to MBS II and 97.1 % of subjects attained up to MBS III (Fig 7.1). At both times points of 2 minutes and 4 minutes, the difference in onset of motor blockage between both groups was statistically significant (p =0.001) where findings inferred that group L had a faster onset of the motor block than group R. The time of onset of motor blockade was faster in group L (2.11 ± 0.47) as compared to group R (2.46 ± 0.85) with a statistically significant difference (p = 0.041). (Fig 7.2)

Figure 7.1: Comparison of study groups according to intraoperative onset of motor block

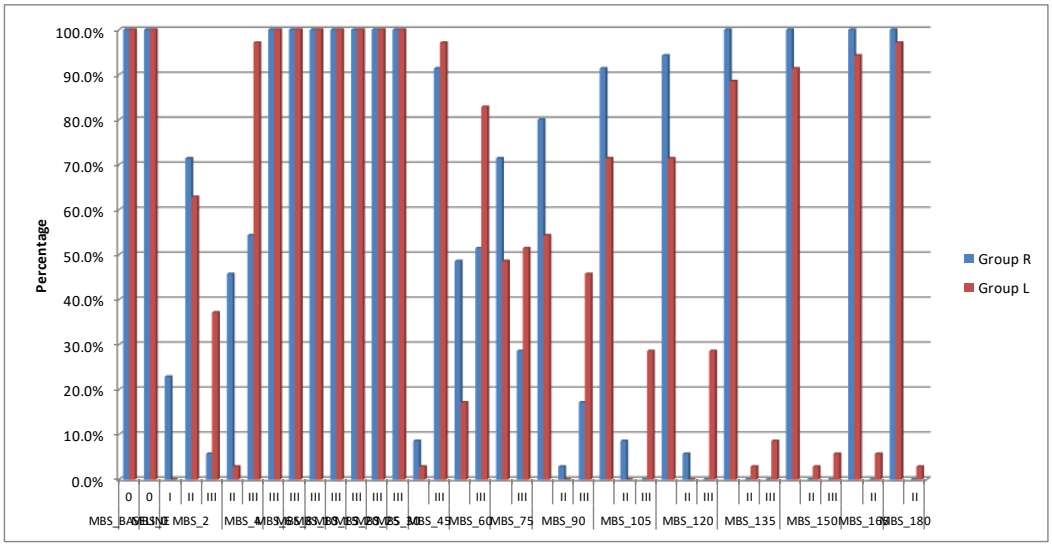


Figure 7.2: Comparison of study groups according to intraoperative onset of motor block

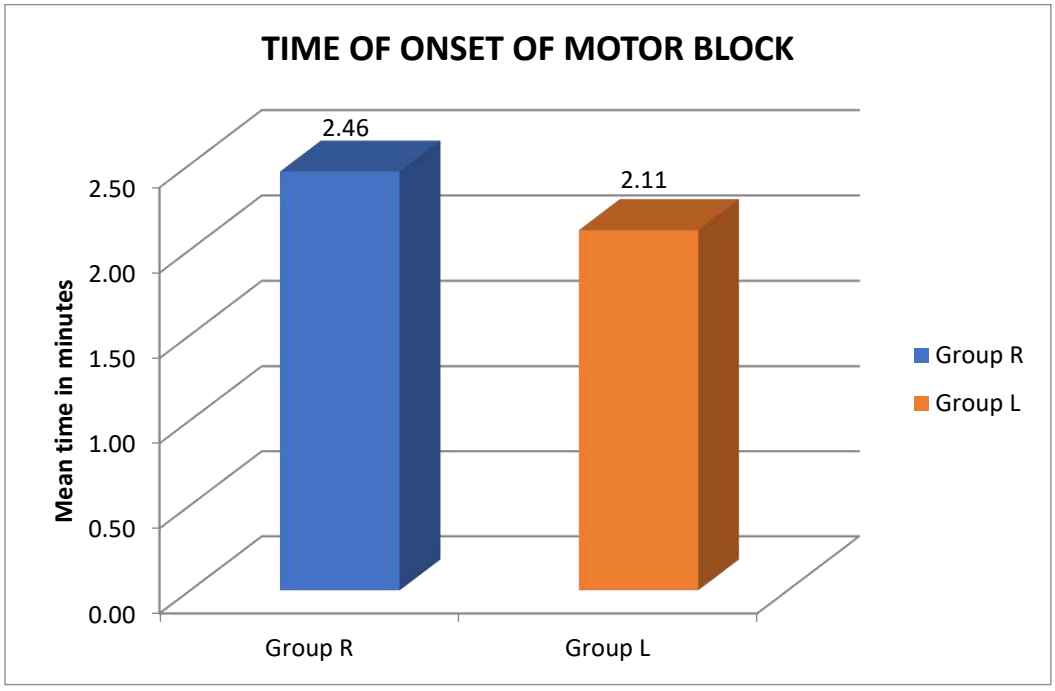


Table 7: Comparison of study groups according to maximum grade of motor blockage achieved intraoperatively

		Group R		Group L		Total	Chi-square value	p-value
		No. of cases	% Age	No. of cases	%Age			
MAX. MOTOR BLOCK ACHIEVED	III	35	100.0%	35	100.0%	70		1.000
Total		35	100.0%	35	100.0%	70		1.000

In Table 7 all the individuals of both groups R and L achieved MBS grade III as the highest level of motor blockage after spinal anaesthesia hence, both groups were statistically comparable (p = 1.000)

Table 8: Comparison of study groups according to time to highest level of motor block achieved

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME TO HIGHEST LEVEL OF MOTOR BLOCK	4.74	1.20	3.43	1.04	-4.267	**0.001**

Time to reach the highest level of motor blockage was again lesser in group L (3.43 ± 1.04) than in group R (4.74 ± 1.20) with a p-value of 0.001 which was statistically significant.

Figure 8: Comparison of study groups according to time to highest level of motor block achieved

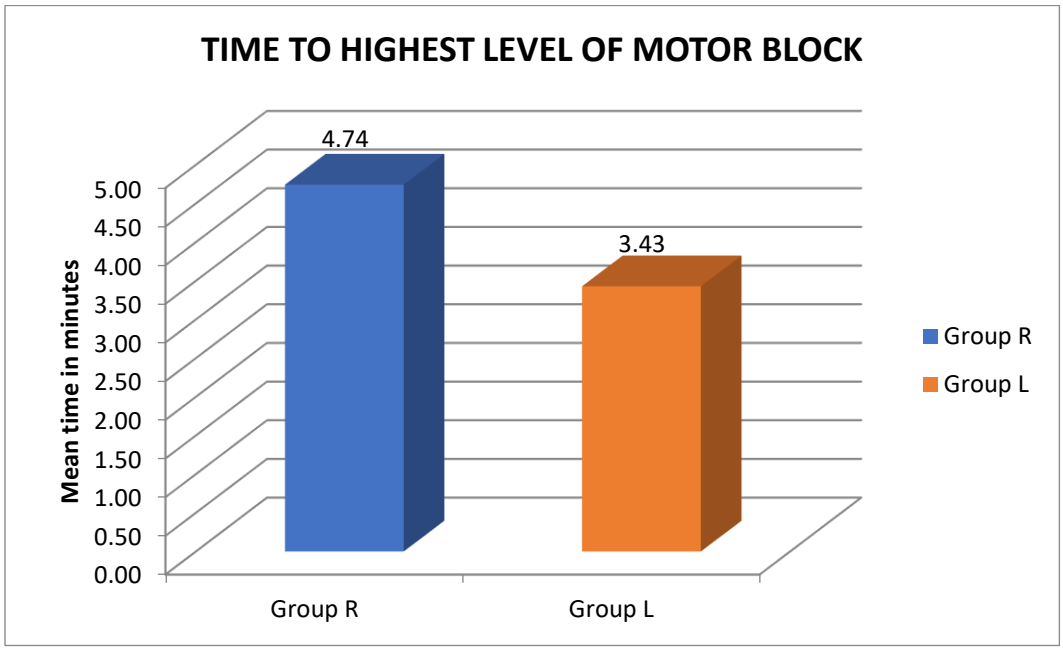


Table 9: Comparison of study groups according to postoperative regression of sensory blockade

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME TO ACHIEVE SENSORY REGRESSION TO T12 DERMATOME	119.63	13.37	147.14	18.76	-5.504	**0.001**

- In our study, sensory blockage regression was taken at the T 12 sensory level. Postoperatively in PACU, observational readings were started at fresh time point 0 hence, no statistically significant difference was seen between both groups at majority time points. However, the intraoperative period was variable in all cases between both groups hence, the difference in total time taken for regression to T 12 sensory level from the time of intrathecal injection was statistically significant between both groups where sensory blockage regression to T12 dermatome was faster in group R (119.63 ± 13.37) as compared to group L (147.14 ± 18.76) with a significant p-value of 0.001 and time to achieve complete motor regression was also found to be faster in group R (147.91 ± 16.74) than group L (190.91 ± 18.08) with a significant statistical difference (p = 0.001).

Figure 9.1: Comparison of study groups according to postoperative regression of sensory blockade

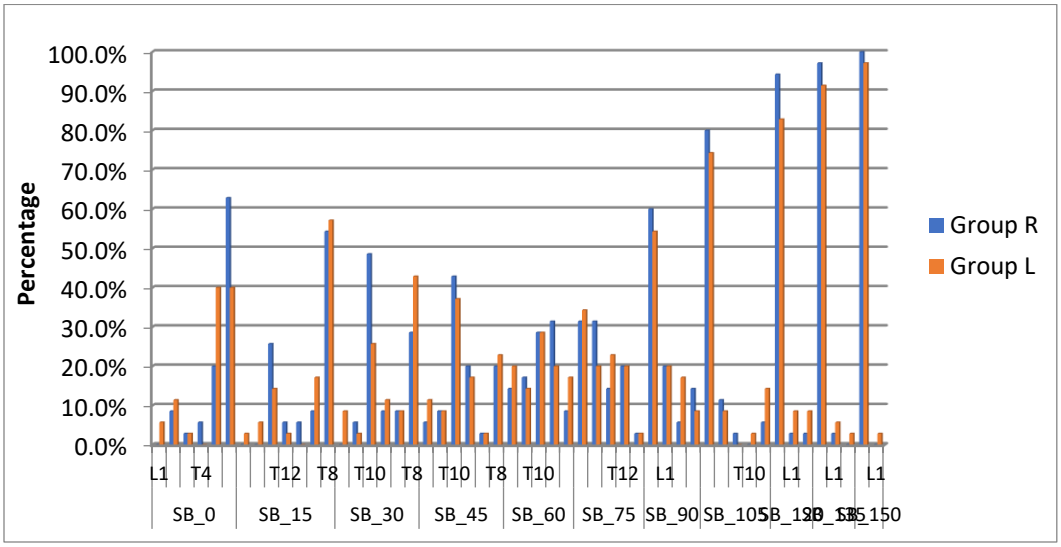


Figure 9.2: Comparison of study groups according to postoperative regression of sensory blockade.

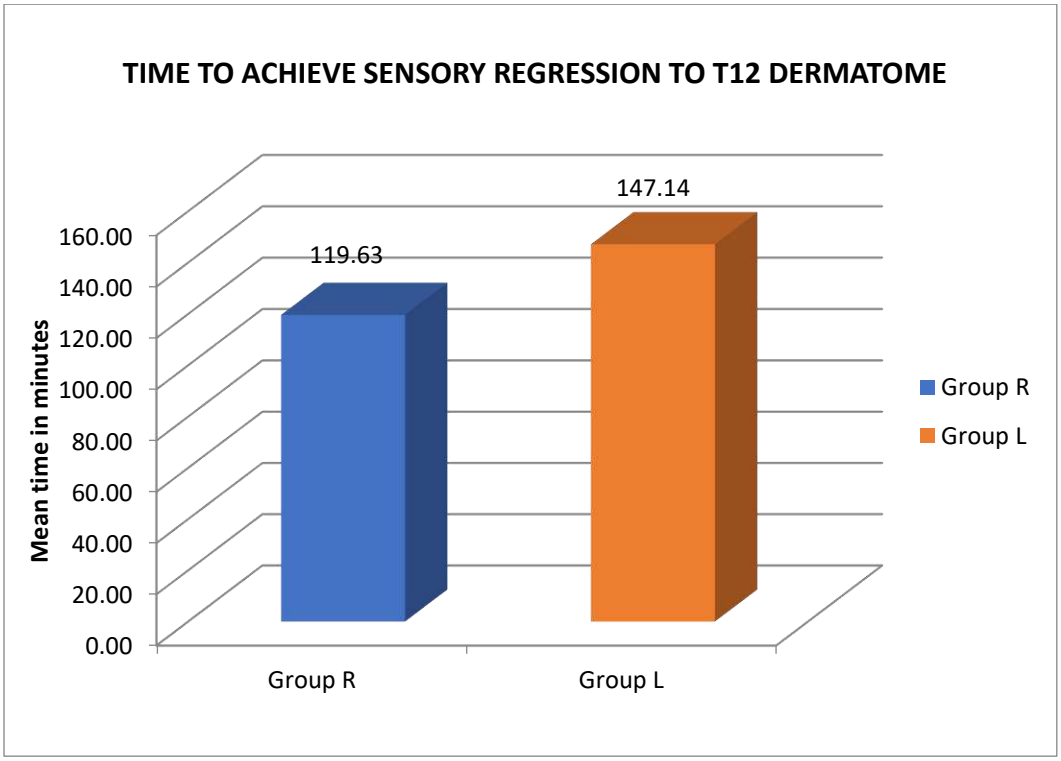


Table 10: Comparison of both study groups according to post-operative motor blockage regression

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TIME TO ACHIEVE COMPLETE MOTOR REGRESSION	147.91	16.74	190.91	18.08	-6.588	**0.001**

- In our study, the parameter for motor regression was taken as complete motor regression to MBS grade 0. Postoperatively in PACU, observation readings were started at the fresh time point of 0 minutes. A statistically significant difference was seen between both groups at time points of 90 minutes, 105 minutes, 120 minutes, and 135 minutes. The intraoperative period was variable in all cases between both groups hence, the difference in total time taken for regression to MBS 0 from the time of intrathecal injection was statistically significant ($p = 0.001$) between both groups where time to achieve complete motor regression was found to be faster in group R (147.91 ± 16.74) than group L (190.91 ± 18.08).

Figure 10.1: Comparison of both study groups according to post-operative motor blockage regression.

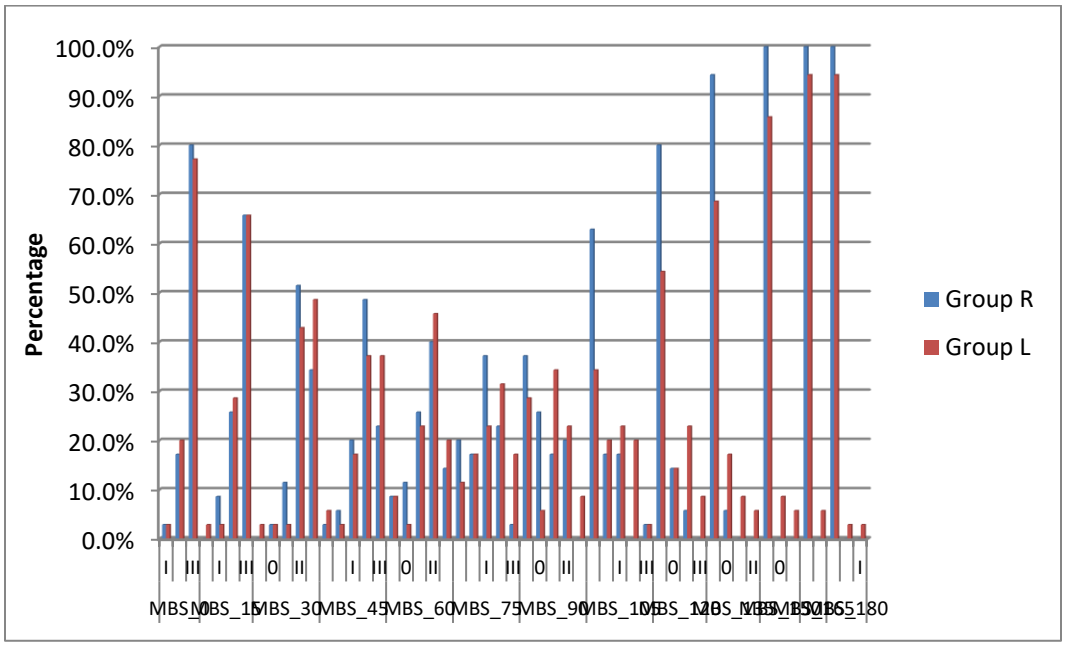


Figure 10.2: Comparison of both study groups according to post-operative motor blockage regression.

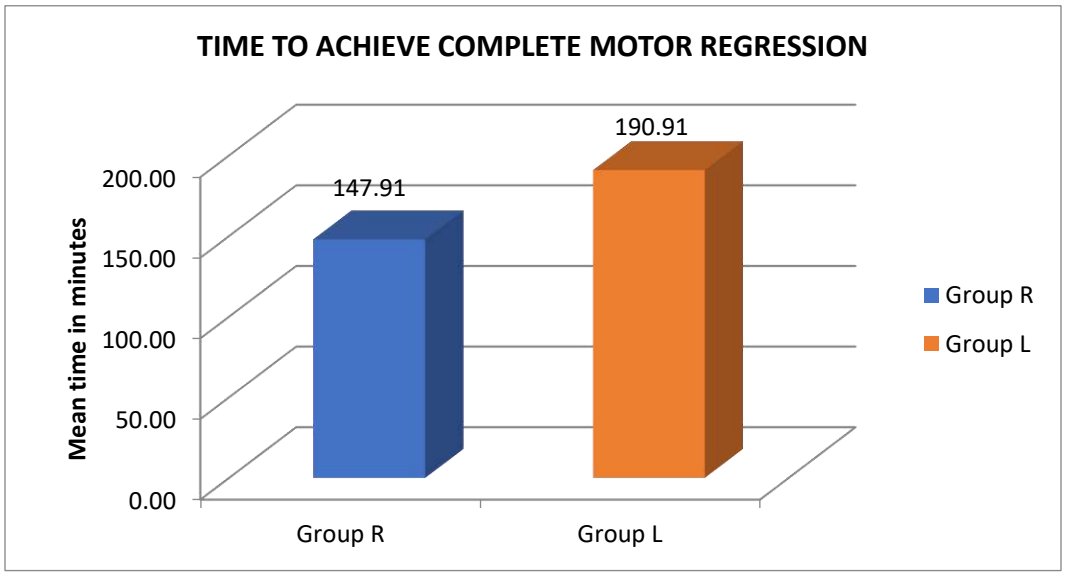
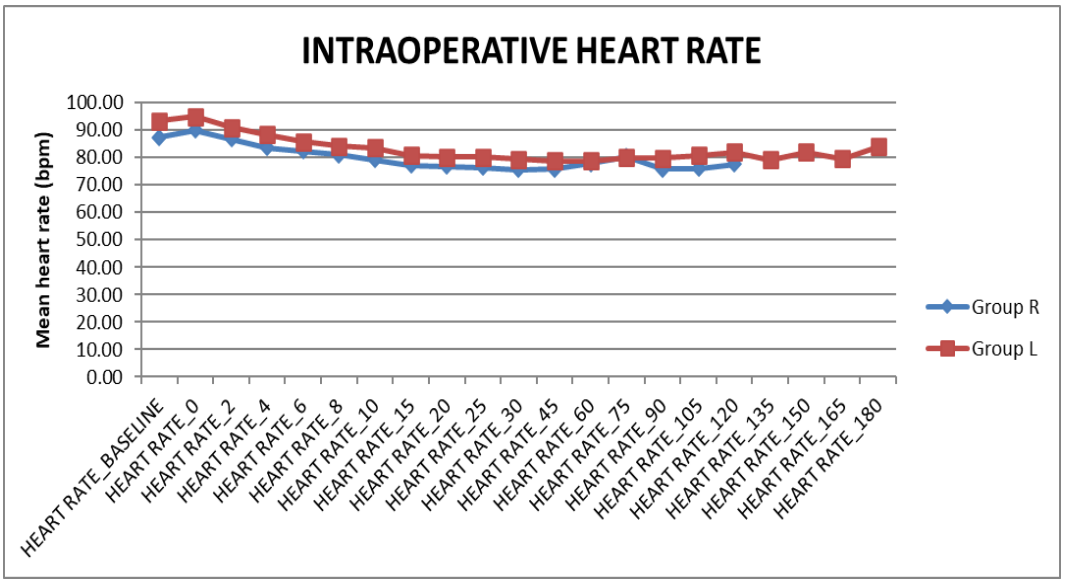
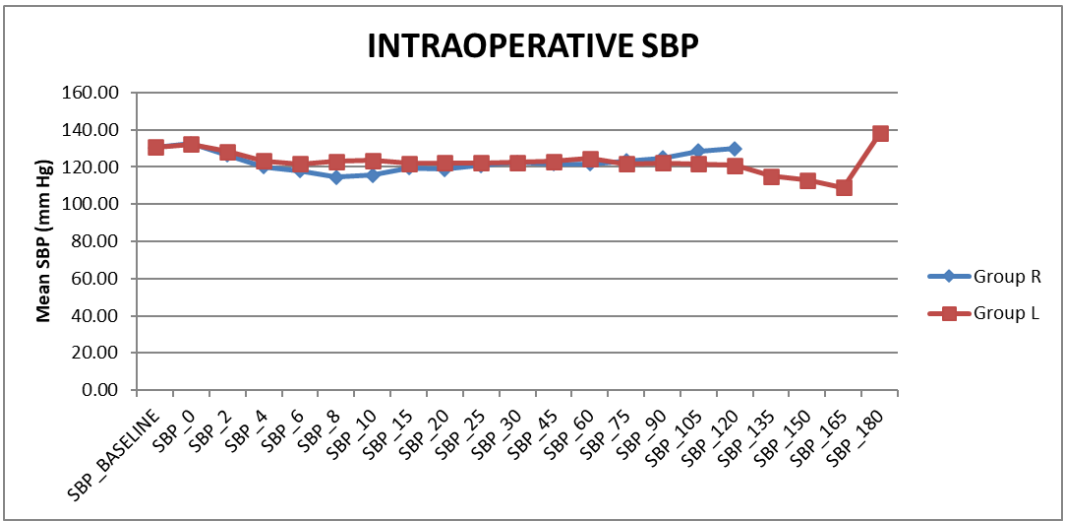


Figure 11. Comparative trends of intraoperative heart rate in both groups.



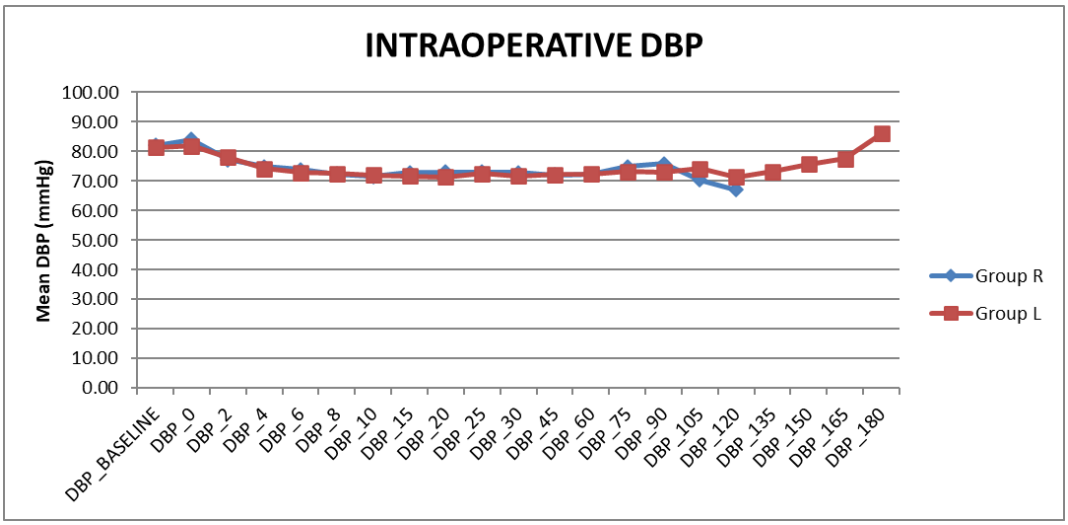
The comparative intraoperative heart rate of both groups at time point of 4 minutes intraoperatively shows statistically significant difference (p = 0.050) where mean heart rate in group R was 83.57± 14.02 per minute and in group L was 88.34± 11.00 per minute. At all other time points intraoperatively heart rate was comparable in both groups.

Figure 12. Comparative trends of intraoperative systolic blood pressure in both groups.



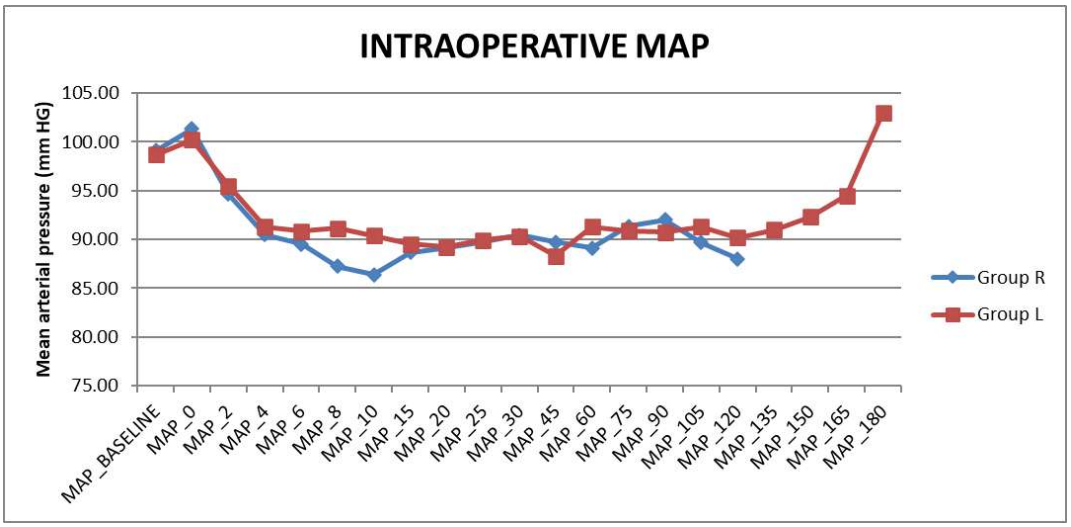
Intraoperative mean SBP showed significant p value of 0.014, 0.03, 0.031 at time points of 8,10 and 20 minutes respectively where, mean SBP in group R at time points of 8, 10 and 20 minutes are 114.51± 15.17 mmHg, 115.63± 13.49 mmHg and 118.77± 7.80 mmHg respectively whereas group L mean SBP at 8, 10 and 20 minutes are 123.11± 18.47 , 123.54± 16.34, 122.20 ±14.67mmHg respectively. At all other time points SBP was comparable in both groups intraoperatively.

Figure 13. Comparative trends of intraoperative diastolic blood pressure in both groups.



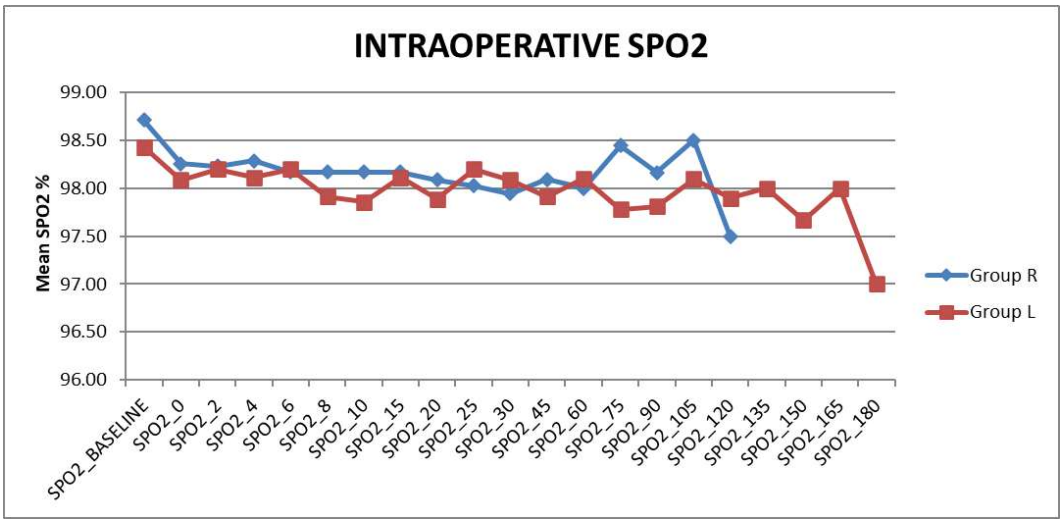
There was no statistically significant difference in diastolic blood pressure in point groups at all time points intraoperatively.

Figure 14. Comparative trends of intraoperative mean arterial pressure in both groups.



MAP was statistically comparable in both groups at all time points intraoperatively.

Figure 15. Comparative trends of intraoperative SPO_2 in both groups.



Comparative intraoperative SpO_2 of both groups at time point of 10 minutes and 75 minutes intraoperatively shows statistically significant difference with a p value of 0.045 and 0.008 respectively where mean SpO_2 in group R was 98.17± 0.66 % and 98.44 ±0.53 % and in group L was 97.86± 0.73 % and 97.78± 0.55 % at time points of 10 minutes and 75 minutes respectively. At all other time points intraoperatively SpO_2 was comparable in both groups.

Table 11: Comparison of Adverse effects between both groups and treatment administered.

		Group R		Group L		Total	Chi-square value	p-value
ADVERSE EEFECTS		No. of cases	%age	No. of cases	%age			
BRADYCARDIA	NONE	35	100.0%	35	100.0%	70		
HYPOTENSION	NONE	29	82.9%	26	74.3%	55	0.765	0.362
	YES	6	17.1%	9	25.7%	15		
NAUSEA/ VOMITING	NONE	34	97.1%	29	82.9%	63	3.968	0.046
	YES	1	2.9%	6	17.1%	7		
DIZZINESS	NONE	35	100.0%	35	100.0%	70		
OTHERS	NONE	35	100.0%	35	100.0%	70		
Total		35	100.0%	35	100.0%	70		

		Group R		Group L		Total	Chi-square value	p-value
TREATMENT ADMINISTERED		No. of cases	%age	No. of cases	%age			
BRADYCARDIA	NONE	35	100.0%	35	100.0%	70		

TREATMENT ADMINISTERED								
HYPOTENSION	INJ EPHEDRINE 6 MG	6	17.1%	8	22.9%	14	1.449	0.484
	INJ EPHEDRINE 6 MG; INJ EPHEDRINE 6 MG	0	0.0%	1	2.9%	1		
	NONE	29	82.9%	26	74.3%	55		
NAUSEA/VOMITING	INJ ONDANSETRONE 4 MG	1	2.9%	6	17.1%	7	3.968	0.046
	NONE	34	97.1%	29	82.9%	63		
DIZIINESS	NONE	35	100.0%	35	100.0%	70		
OTHERS	NONE	35	100.0%	35	100.0%	70		

Above tables show statistically significant difference (p=0.046) in incidence of nausea vomiting in subjects of group R (2.9%) as compared to subjects of group L (17.1%). Hypotension was seen in 17.1 % subjects of group R as compared to 25.7 % in group L, difference in incidence of hypotension in both groups are statistically comparable (p = 0.362). Other parameters of adverse effects were statistically insignificant in both groups.

Figure 16. Comparative trends of intraoperative SPO_2 in both groups.

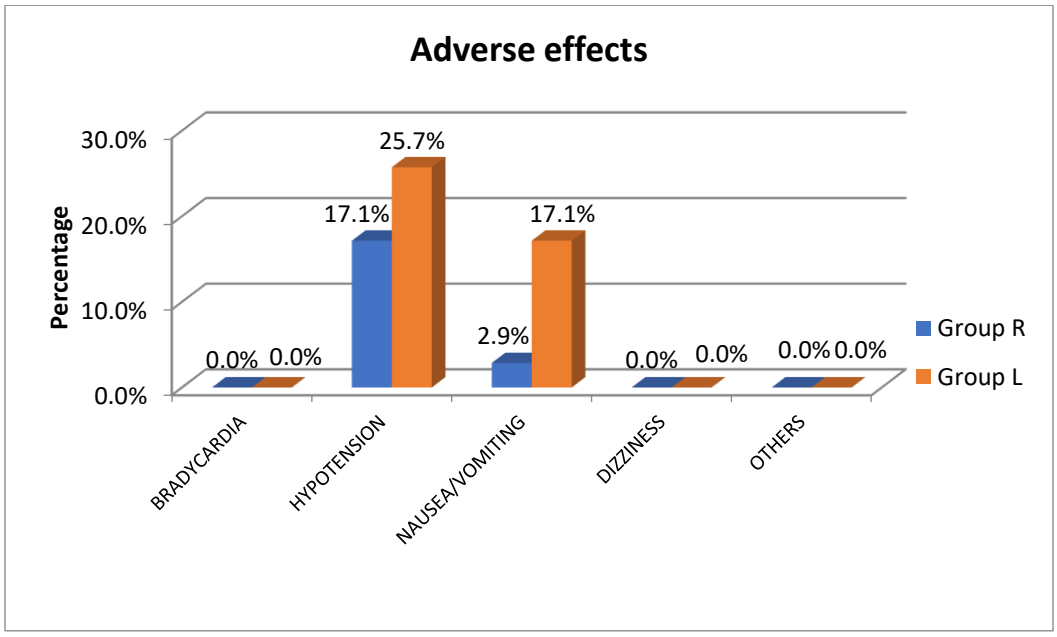


Table 12: Comparison of duration of analgesia in both groups.

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
DURATION OF ANALGESIA	200.63	48.90	222.43	61.15	-2.624	0.009

Duration of analgesia in both groups was measured from time of administration of intrathecal injection till time to first call for rescue analgesia. Duration of analgesia was higher in group L (222.43 ± 61.15 minutes) as compared to group R (200.63 ± 48.90 minutes) with statistically significant difference (p = 0.009).

Figure 17: Comparison of duration of analgesia in both groups.

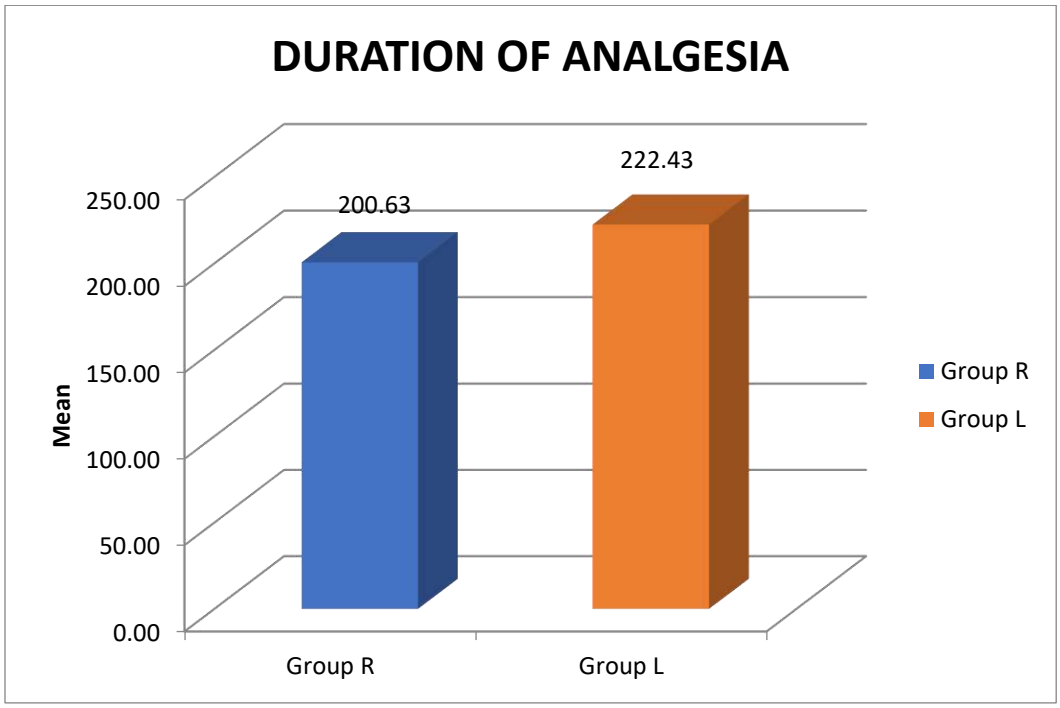
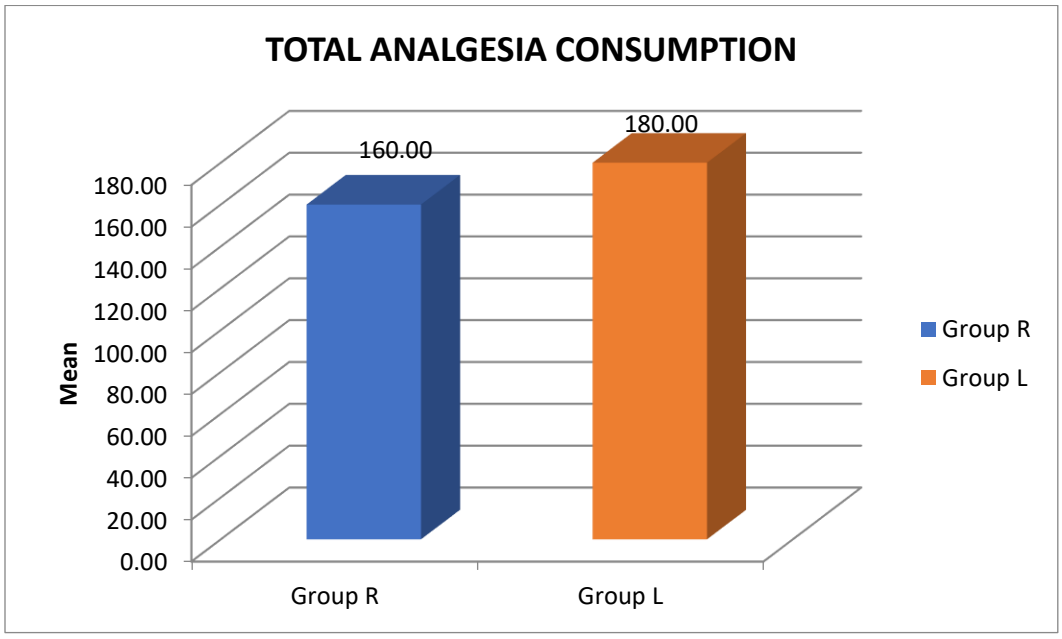


Table 13: Comparison of total consumption of analgesia in both groups.

	Group R		Group L		Z	p-value
	Mean	SD	Mean	SD		
TOTAL ANALGESIA CONSUMPTION	160.00	43.39	180.00	45.70	-1.535	0.125

Total consumption of analgesia was calculated till 24 hrs postoperatively from time of intrathecal injection administration. Total dose of injection tramadol used was calculated whenever VAS > 4 in this period in milligrams. Study showed total analgesia consumption in both groups was statistically comparable (p = 0.125) where, group R had mean consumption of 160 ± 43.39 mgs of analgesic as compared to group L with mean consumption of 180 ± 45.70 mgs of analgesic.

Figure 18: Comparison of total consumption of analgesia in both groups.



DISCUSSION

Spinal anesthesia, or subarachnoid block (SAB), involves injecting a local anesthetic into the cerebrospinal fluid (CSF) and is widely used for lower limb and abdominal surgeries. Hyperbaric local anesthetics, such as 0.5% levobupivacaine and 0.75% ropivacaine, were recently launched commercially in India and are of particular interest due to their efficacy and duration of action. A few studies in previous years have shown that 0.5% levobupivacaine produces effects similar to hyperbaric bupivacaine, and 0.75% ropivacaine results in a shorter block duration. Due to the scarcity of comparative study data between these two drugs, we aim to conduct a study that compares these two relatively newer anesthetics to evaluate their efficacy and safety, aiming to determine the better alternative to bupivacaine for below-umbilical surgeries.

The current study aimed to compare the sensory and motor block characteristics of hyperbaric 0.5% Ropivacaine and hyperbaric 0.5% Levobupivacaine for subarachnoid block. The parameters measured were the time it took for the block to begin, the highest level of sensory block and degree of motor block achieved, the duration of the block, intraoperative hemodynamic changes, side effects, and the duration of postoperative analgesia. The study was carried out in the Department of Anaesthesiology at Dayanand Medical College and Hospital.

We chose to compare 0.5% levobupivacaine and 0.75% ropivacaine heavy as study doses, based on findings by Lee et al. in their study on the Median Effective Dose (ED50) of Bupivacaine, Levobupivacaine, and Ropivacaine after intrathecal injection for lower limb surgery. The researchers discovered that the ED50s for ropivacaine were 8.41 mg (95% CI: 7.15-9.67 mg), 5.68 mg for levobupivacaine (95% CI: 4.92-6.44 mg), and 5.50 mg for bupivacaine (95% CI: 4.90-6.10 mg). The relative anaesthetic potency ratios for levobupivacaine/bupivacaine were 0.97 (95% CI: 0.81-1.17), ropivacaine/bupivacaine was 0.65 (95% CI: 0.54-0.80), and ropivacaine/levobupivacaine was 0.68 (95% CI: 0.55-0.84). The

nearest commercially available concentrations to above mentioned ED50 are 0.5% hyperbaric levobupivacaine and 0.75% hyperbaric ropivacaine hence, we chose these concentrations for study in our trial.[34]

Both groups in our study were comparable in demographic profile, showing no significant differences in mean age, height, weight, or BMI. Gender distribution revealed more male subjects in both groups, though the comparative outcome was statistically insignificant (p=0.078). The number of patients with ASA physical status grades I and II were also statistically comparable between Group R and Group L (p=0.806). Specifically, 37.1% and 40.0% of individuals in Group R and Group L, respectively, had ASA physical status grade I, while 62.9% and 60.0% had ASA physical status grade II, respectively.

In our study, the onset of sensory block intraoperatively was assessed at the T8 dermatome level, revealing a statistically significant difference between the two groups at 4 and 6 minutes. Group L (levobupivacaine) exhibited a faster onset of sensory block (3.66 ± 0.76 minutes) compared to Group R (ropivacaine) (4.69 ± 1.08 minutes).

Vani et al. observed a faster sensory block onset with isobaric 0.5% levobupivacaine (3.90 ± 1.37 minutes) compared to isobaric 0.5% ropivacaine (7.05 ± 2.96 minutes) at T10 dermatome, consistent with our findings using hyperbaric formulations and highlighting the superior efficacy of levobupivacaine.[36] However, Vani et al. used a 0.5% concentration of ropivacaine, which is not equipotent to 0.5% levobupivacaine[34], resulting in a longer sensory block onset time than in our study.

Dar et al compared 15 mg 0.5% hyperbaric bupivacaine and 15 mg 0.5% ropivacaine in the subarachnoid block in patients undergoing lower-limb surgeries, they found that ropivacaine has a longer sensory onset time (6 ± 1.3 min) as compared to bupivacaine (3 ± 1.1 min) at T10 dermatome; P < 0.001.[37] Again, Dar et al didn't use equipotent doses of drugs which signifies a longer time to sensory onset with ropivacaine as compared to

our study. Also, Girish BK et al compared the effects of spinal anesthesia with 3.5 ml of 0.5 % hyperbaric bupivacaine (15 mg with 0.5 ml saline) versus 3.5 ml of 0.5% hyperbaric levobupivacaine (15 mg with 50 % dextrose to make it hyperbaric) in lower limb surgeries. They found sensory block onset comparable in the bupivacaine group (mean 2.51 min) and the levobupivacaine group (mean 2.68 min) at T 12 dermatome.[39] The mean time of sensory block onset was shorter in the study by Girish BK et al as they took the T12 dermatome as sensory block onset.

So above studies conclude that levobupivacaine has a faster onset of the sensory block than ropivacaine, aligning with our study findings.

In contrast, JF Luck et al. conducted a study comparing 3 ml of 0.5% hyperbaric bupivacaine, levobupivacaine, and ropivacaine for intrathecal blocks in elective surgeries (all three drugs made hyperbaric by adding 30 mg glucose per ml). They found no significant difference in the time of onset of sensory block among the three groups, with each group showing a median time of 5 minutes (range: 2–15 minutes) for sensory block onset at the T10 dermatome.[32] Unlike our study, these findings differ, which could be attributed to JF Luck's use of non-equipotent doses and indigenously prepared hyperbaric formulations.

The delay in sensory block onset with ropivacaine can be attributed to its lower lipophilicity. The effectiveness of local anesthetics is directly related to the myelination and size of nerve fibers. More lipophilic agents, like bupivacaine and levobupivacaine, are likely to penetrate larger myelinated motor fibers more rapidly and persistently than less lipophilic drugs, such as ropivacaine.[28]

In our study, the maximum sensory level achieved was T4 in 5.71% of subjects in Group R and 8.6% in Group L, with T6 in 94.3% of Group R and 91.4% of Group L subjects. These findings conclude that the maximum number of subjects achieved T6 as the highest level of sensory block in both groups and results were statistically comparable ($p = 0.643$).

Girish BK et al compared the effects of spinal anesthesia with 3.5 ml of 0.5 % hyperbaric bupivacaine (15 mg with 0.5 ml saline) versus 3.5 ml of 0.5% hyperbaric levobupivacaine (15 mg with 50 % dextrose to make it hyperbaric) in lower limb surgeries. They found maximum sensory level achieved in group bupivacaine and levobupivacaine respectively was T6 in 16.7% and 20% of subjects, T8 in 76.7% and 80 % of subjects, T10 in 2% and 0% of subjects at T10 dermatome.[39] The mean lower dermatomal level (T8) of sensory block achieved in Girish BK's study can be attributed to the use of indigenously prepared hyperbaric formulations for trial. Also, Garaniya RR et al compared the efficacy of intrathecal hyperbaric ropivacaine 0.75% (3ml) versus hyperbaric bupivacaine 0.5%(3ml) in patients undergoing lower abdominal surgery. They found the mean highest level of sensory block achieved in both groups was T6 dermatome.[44] Also, Athar M et al studied spinal block characteristics of 15mg of isobaric levobupivacaine versus 22.5 mg of isobaric ropivacaine in patients undergoing lower limb orthopedic surgeries and found the mean highest level of sensory block achieved in both groups was comparable (T7 dermatome).[38] However, a lower dermatomal level achieved in their study can be attributed to the use of isobaric formulations.

The conclusive outcome of the above studies along with our study results underscores that levobupivacaine and ropivacaine have comparable profiles in terms of achieving the highest level of sensory block.

These observations are attributed to some factors- 1) the dose of the drug injected, the baricity of the injected solution, and patient positioning immediately after intrathecal injection. In our study, both the drugs had the equipotent and equal volume doses with similar baricity, moreover, a standardized protocol for patient positioning after subarachnoid block was used, to control the effect of gravity on the spread. Hence, leading to a comparable highest level of sensory block patterns.

We found in our study that the mean time to reach peak sensory level was lesser in group L (5.89 ± 0.96 minutes) than in group R (7.20 ± 1.11 minutes) and the difference was statistically significant (p= 0.001). Studies suggest that ropivacaine is less potent than levobupivacaine (effective dose in 95% of population-ED_{95} of levobupivacaine/ropivacaine-0.93).[33] Similarly, Vani et al. observed that the time to reach peak sensory level with equal volumes of isobaric 0.5% levobupivacaine was faster (7.50±1.46 min) as compared to isobaric 0.5% ropivacaine (10.35±3.48 min). This finding aligns with our study using hyperbaric formulations.[36] However, Vani et al used isobaric formulations of both drugs, and drug doses were also not equipotent hence the time taken to reach the highest sensory level was also more than in our study.

In contrast to the current study, J.F. Luck et al. reported a faster time to peak sensory level with 3 ml of hyperbaric 0.5% ropivacaine (20 min) as compared to 3ml of hyperbaric 0.5% levobupivacaine (25 min), both made heavy by adding 30 mg glucose per ml of each drug; which was statistically insignificant.[32] However, they did not use equipotent doses and standard hyperbaric formulations in their study hence, their findings are inconsistent with our study results.

Our study found that the onset of the motor block was faster in the levobupivacaine group than in the ropivacaine group, with a p-value of 0.001. Specifically, the mean time to reach the Modified Bromage Scale grade II motor block was 2.11 ± 0.47 minutes in Group L than 2.46 ± 0.85 minutes observed in Group R (p = 0.041). Similarly, AM Patel et al studied 0.5% isobaric levobupivacaine and 0.75% isobaric ropivacaine in the intrathecal block in lower limb surgeries and found that the onset of motor block (MBS grade 1) in the levobupivacaine group was significantly faster (1.68±0.638 min) than the ropivacaine group (2.82±0.626 min); p=<0.001.[40] However, the slight variance in time to onset of motor block is due to the use of isobaric preparations and onset at MBS grade 1 by AM Patel et al as compared to our study.

On the contrary, JF Luck found a significantly faster mean onset time of motor block (MBS grade 3) in the 0.5% hyperbaric levobupivacaine group (mean 5 min) as compared to the 0.5% hyperbaric ropivacaine group (mean 10 min), p = 0.48.[32] However, the time taken for the onset of motor block is incomparable to our study as JF luck took non-equipotent doses and indigenously prepared formulations in their study moreover, they took MBS grade 3 as the onset point of motor block hence their time taken to the onset of motor block was higher than our study.

These consistent findings across multiple studies highlight the rapid onset of motor block with levobupivacaine compared to ropivacaine which might be attributed to levobupivacaine's higher lipophilic nature thus, faster penetration across motor nerve fibers as compared to ropivacaine, underscoring its effectiveness in achieving quicker motor block onset in clinical settings.

In our study, all the individuals of groups R and L achieved MBS grade III as the highest level of motor blockage after spinal anesthesia hence, both groups were statistically comparable (p = 1.000). We used both drugs with the equipotent and equal doses with similar baricity, moreover, a standardized protocol for patient positioning after a subarachnoid block was used, to control the effect of gravity on the spread. Hence, leading to a comparable highest grade of motor block patterns.

We found no studies directly comparing the highest grade of motor blockade achieved amongst hyperbaric levobupivacaine and hyperbaric ropivacaine following intrathecal block. Patients in the 0.5% ropivacaine group had less motor block, according to research by J. F. Luck et al.; however, 95% of participants in the 0.5% bupivacaine group and 90% of individuals in the 0.5% levobupivacaine group achieved Bromage scores of 3, respectively.[32] These findings are in discordance with our study which can be attributed to the fact that JF Luck et al didn’t use equipotent doses of all three drugs and also the baricity of the drugs was not standardized.

Although in our study, we found that the maximum grade of motor block was MBS grade 3 in all subjects of both groups, the time to reach the highest level of motor block was significantly shorter in the levobupivacaine group (3.43 ± 1.04 minutes) compared to the ropivacaine group (4.74 ± 1.20 minutes), with a p-value of 0.001. This can be attributed to the lower potency of ropivacaine as compared to levobupivacaine.[33,34] This result aligns with the findings of AM Patel et al who found that the time to reach the highest grade of motor block (MBS grade 3) in the levobupivacaine group was significantly faster (6.68±1.147 min) than the ropivacaine group (7.97±0.87); p=<0.001.[40] Also, Dinesh et al compared the effects of 3ml Levobupivacaine 0.5% (15 mg) and 3ml Ropivacaine 0.5% (15 mg) l for spinal anaesthesia and found that time to complete motor blockade (Bromage Score 4)was faster in levobupivacaine group (9.033± 02.67 minutes) than ropivacaine group (12.63±3.5 minutes).[41] However, the variance in time to onset of motor block is due to the use of isobaric preparations by AM Patel et al and Dinesh et al in their studies.

J.F. Luck et al. reported a shorter time to maximum motor block with hyperbaric 0.5% levobupivacaine (5 minutes) compared to 0.5% hyperbaric ropivacaine (10 minutes) (p = 0.04).[32]

Overall, our findings suggest that levobupivacaine reaches the highest motor block level faster than ropivacaine at equipotent doses, supporting its use for quicker motor block onset in clinical practice.

In the present study, we found that the regression time to the T12 sensory level was significantly faster in the ropivacaine group (119.63 ± 13.37 minutes) compared to the levobupivacaine group (147.14 ± 18.76 minutes) (p = 0.001). This aligns with the findings of O. Sagir et al., who found that 0.5% hyperbaric levobupivacaine reaches sensory regression to the T12 dermatome in 154 ± 50 minutes.[35] Similarly, Gaikwad M. et al. found that the time to sensory regression to the S2 dermatome with 3.2 ml of 0.75% hyperbaric ropivacaine was 127.5 minutes.[46] The variance in

total sensory regression time in Gaikwad M. et al. was due to choosing the S2 level for total sensory regression and also the volume of the drug was higher than in our study.

These findings might be attributed to faster recovery of sodium channel blockade after treatment with ropivacaine leading to faster recovery from sensory blockade.

The time to achieve complete motor regression was significantly faster in group R (147.91 ± 16.74 minutes) than in group L (190.91 ± 18.08 minutes), with a significant statistical difference (p = 0.001). This finding is consistent with a study by AM Patel et al who found that the time for complete motor block regression (MBS grade 0) in the ropivacaine group was significantly faster (154±9.61 min) than the levobupivacaine group (183±10.59 min); p=<0.001.[40] However, the variance in time to onset of motor block is due to the use of isobaric preparations by AM Patel et al. Similarly, Suchita K et al studied 2.5 ml (12.5 mg) levobupivacaine with 0.5 ml fentanyl and 2.5 ml (12.5 mg) of ropivacaine with 0.5 ml of fentanyl for spinal anaesthesia and found that levobupivacaine had a longer duration of the motor block (180.9 min) as compared to ropivacaine (162.1).[42] However, they used non-equipotent and isobaric formulations for study. Also, J.F. Luck et al, found that the mean time for complete motor regression was shorter in the ropivacaine group (90 minutes) compared to the levobupivacaine group (180 minutes), with a significant p-value of 0.0001.[32] However, the shorter time to complete motor regression in the ropivacaine group in the JF Luck study was due to the use of non-equipotent doses of drugs.

This faster recovery in the ropivacaine group is attributed to the quicker recovery of sodium channel blockade and the lesser lipid solubility of ropivacaine, leading to faster recovery from motor blockade.

In our study, the duration of analgesia was significantly higher in group L (222.43 ± 61.15 minutes) compared to group R (200.63 ± 48.90 minutes), with a statistically significant difference (p = 0.009). This result is

consistent with the findings of Soni et al. who compared intrathecal block efficacy of 3 ml isobaric Levobupivacaine (0.5%) versus 3ml of isobaric Ropivacaine (0.75%) with Fentanyl (25µg) and found that the mean duration of analgesia was longer in group LF (292.83 ± 5.28 minutes) compared to group RF (258 ± 4.32 minutes), with a significant p-value of 0.001.[43] Hence, the first rescue analgesic time was significantly shorter with Ropivacaine than with Levobupivacaine. These findings align with our study, attributing the longer duration of the sensory block with Levobupivacaine compared to Ropivacaine. However, the variance in time of total duration of analgesia compared to our study is due to the use of fentanyl by P Soni et al in their trial. Fentanyl being an opioid analgesic provides a longer duration of analgesia in the intrathecal block as compared to the drug administered without an adjuvant.

Our study showed total analgesia consumption in both groups was statistically comparable (p = 0.125) where group R had a mean consumption of 160 ± 43.39 mgs of analgesia as compared to group L with a mean consumption of 180 ± 45.70 mgs of analgesia. Nevertheless, according to research conducted by Sampat Rathod et al., comparing the intrathecal administration of isobaric ropivacaine (0.5%) and isobaric levobupivacaine (0.5%) in patients undergoing lower abdominal and lower limb surgeries, the former group required a higher mean total dose of analgesic—75 mg of intramuscular Diclofenac—when pain (VAS score of 3) was experienced, and this difference was found to be statistically significant.[45]

In our study, at all intraoperative time points, heart rates were comparable between both groups. However, at the 4-minute intraoperative time point, the heart rate showed a statistically significant difference (p = 0.050) with group R having a mean heart rate of 83.57 ± 14.02 per minute and group L having a mean heart rate of 88.34 ± 11.00 per minute. Also, SBP at all time points was comparable between both groups except at time points of 8, 10, and 20 minutes intraoperatively where a significant difference was

seen between both groups in depicting group R with lower mean SBP values than group L.

No statistically significant differences were observed in diastolic blood pressure, mean arterial pressure (MAP), and SpO2 at any intraoperative time points in either group. Similarly, P Soni et al. found that hemodynamic parameters, including HR, systolic, and diastolic blood pressure, were comparable between the two groups at various time intervals, with no significant differences observed.[43]

In our study, there was a statistically significant difference (p=0.046) in the incidence of nausea and vomiting in subjects of group R (2.9%) as compared to subjects of group L (17.1%). Hypotension was seen in 17.1 % of subjects of group R as compared to 25.7 % in group L, the difference in the incidence of hypotension in both groups is statistically comparable (p = 0.362). Hence, this indicates that subjects of group L suffered more side effects in terms of hypotension, nausea, and vomiting as compared to group R subjects. Other parameters of adverse effects like bradycardia and dizziness were not observed in either of the groups in our study.

Similarly, In a study by Sampat Rathod et al**,** they found that the incidence of nausea and vomiting was higher in the levobupivacaine group with 16.7% of subjects experiencing nausea and vomiting as compared to the ropivacaine group where only 6.7% of subjects experienced nausea and 10 % experienced vomiting whereas the incidence of hypotension was comparable in both groups which was 16.7 % in each group.[41]

The lesser incidence of side effects in the ropivacaine group can be attributed to its slower onset after intrathecal injection due to which adverse responses like hypotension, nausea, and vomiting get compensated

Strengths of our study:

1. Double-blinded randomized control trial.
2. Adequate sample size.
3. Use of equipotent dosages.

4. Use of newly launched hyperbaric drug formulations.

Limitations of our study:

1. Single-center study.
2. Included only elective cases.
3. Conducted on only ASA physical status grade 1 and 2 patients.

SUMMARY AND CONCLUSION

This prospective study was conducted in the Department of Anaesthesiology, Dayanand Medical College and Hospital, Ludhiana on 70 patients of ASA grade I-II, age 18 years and above of either gender scheduled for below umbilical surgeries under subarachnoid block. Subjects were divided into two study groups, group L and group R. Each study group was allocated 35 subjects. A standardized spinal anaesthesia technique was used in both groups. Group L was given 3 ml of 0.5% hyperbaric levobupivacaine intrathecally and Group R was administered 3 ml of 0.75% hyperbaric ropivacaine.

We observed that subjects in 0.5% hyperbaric levobupivacaine demonstrated a faster onset of sensory block and the maximum level of sensory block was achieved more quickly as compared to 0.75% hyperbaric ropivacaine. Both group subjects reached comparable highest sensory block levels. Additionally, the sensory block duration was longer with 0.5% hyperbaric levobupivacaine than with 0.75% hyperbaric ropivacaine. Regarding motor block, 0.5% hyperbaric levobupivacaine showed a quicker onset and reached the highest grade of motor block faster, although the maximum motor block grade achieved was similar for both groups. The motor block duration was also longer with 0.5% hyperbaric levobupivacaine. Intraoperative hemodynamics remained stable with both drugs, except for a higher incidence of nausea and vomiting with levobupivacaine at certain intraoperative time points. Furthermore, 0.5% hyperbaric levobupivacaine provided a longer duration of analgesia compared to 0.75% hyperbaric ropivacaine, although postoperative analgesia consumption was comparable between the two groups.

In conclusion, intrathecal hyperbaric 0.5% levobupivacaine offers a faster onset and longer duration of sensory and motor blocks than 0.75% hyperbaric ropivacaine. Both drugs deliver satisfactory anaesthesia for below-umbilical surgeries and maintain stable intraoperative

hemodynamics. While both drugs also provide adequate analgesia, 0.5% hyperbaric levobupivacaine stands out for its prolonged duration of analgesia. Consequently, 0.75% hyperbaric ropivacaine may be preferred for short day-care surgeries due to its effective block characteristics, comparatively shorter duration of analgesia, and facilitation of early ambulation. Conversely, 0.5% hyperbaric levobupivacaine is more suitable for prolonged surgeries due to its extended sensory and motor block duration and prolonged analgesia.

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S.NO.	MRD.NO.	RANDOMISATION NUMBER	GROUP	NAME INITIALS	AGE	SEX	ASA GRADE	HEIGHT	WEIGHT	BMI	DIAGNOSIS	SURGERY PERFORMED	DURATION OF SURGERY	TIME OF INTREATHECAL INJECTION
1	1409602	1	R	RP	47Y	M	I	175 CM	78KG	25.5	LEFT RENAL CALCULUS	URS	45 MIN	12:40 PM
2	1404382	2	L	KS	70Y	M	II	175 CM	79 KG	25	BPH	TURP	60 MIN	10:08 AM
3	1412184	3	R	AS	20Y	M	I	175 CM	78 KG	24.7	LEFT VERICOCELE	VARICOCELE REPAIR	90MIN	1:10 PM
4	1450010	4	R	RG	30Y	M	II	165 CM	50KG	17.8	LEFT URETRIC CALCULUS	URS	45 MIN	9:53 AM
5	1476734	5	R	HS	21Y	M	II	178 CM	64 KG	19.7	RIGHT KNEE SCREW INSITU	RIGHT KNEE SCREW REMOVAL	30MIN	12:40 PM
6	1408710	6	L	RK	45Y	M	II	165 CM	89 KG	32.7	RIGHT URETRIC CALCULUS	URS	60 MIN	11:56
7	1483237	7	R	ML	50Y	M	I	175 CM	81 KG	27.2	FISTULA IN ANO	FISTULECTOMY	60 MIN	2:20 PM
8	1409616	8	L	DS	65Y	M	II	180 CM	90 KG	26.9	BPH	TURP	90 MIN	10:05 AM
9	1485468	9	R	RK	26Y	M	I	170 CM	72 KG	24.1	RIGHT FOOT IMPLANT IN SITU	IMPLANT REMOVAL	60 MIN	7:40 PM
10	225855	10	L	L	35Y	F	I	160 CM	64 KG	24.2	LEFT PROXIMAL FEMUR FRACTURE	FEMUR NAILING	165 MIN	7:15 PM
11	1490563	11	R	AR	32Y	M	II	170 CM	78 KG	27	RIGHT TOE CRUSH INJURY	TOE AMPUTATION	45 MIN	1:50 PM
12	1481933	12	L	PK	18Y	M	I	173 CM	63 KG	20.5	PILONIDAL SINUS	SINUS EXCISION	35 MIN	1:00 PM
13	1490208	13	R	GS	40Y	M	I	160CM	79 KG	26.5	LEFT LEG MASS	BONE BIOPSY	30 MIN	3:30 PM
14	1440815	14	L	AK	40 Y	M	II	167 CM	73 KG	25.2	ILEOSTOMY IN SITU	STOMA CLOSURE	90 MIN	9:30 AM
15	1480845	15	L	JS	58 Y	M	II	170 CM	72 KG	22.8	DIABETIC FOOT	BELOW KNEE AMPUTATION	120 MIN	10:10 AM
16	1474400	16	L	SS	19Y	M	II	168 CM	80 KG	26	LEFT LEG WOUND	DEBRIDEMENT AND SKIN GRAFTING	45 MIN	1:06 PM
17	1491020	17	L	MK	21Y	M	I	165 CM	58 KG	20.6	FRACTURE RIGHT TIBIA	PROXIMAL TIBIA NAILING	75 MIN	1:10 PM
18	1490317	18	R	H	23Y	M	I	160 CM	78 KG	26.1	LEFT LEG LIPOMA	LIPOMA EXCISIOMN	120 MIN	10:35 AM
19	1491710	19	L	SS	54Y	M	II	160 CM	92 KG	30.8	FRACTURE LEFT FEMUR	LEFT FEMUR NAILING	180 MIN	2:30 PM
20	1489985	20	L	KB	28Y	M	II	168 CM	81 KG	28	FRACTURE LEFT FEMUR	ORIF LEFT FEMUR	90 MIN	2:15 PM
21	1499251	21	L	JS	22Y	M	II	177 CM	69 KG	22	DISTAL FEMUR AND PROXIMAL TIBIA FRACTURE	DEBRIDEMENT AND EXFIX APPLICATION	135 MIN	10:15 AM
22	1489985	22	R	KB	28Y	M	II	168 CM	81 KG	28	LEFT FEMUR NAIL IN SITU	NAIL REMOVAL	70 MIN	10:22 AM
23	1511114	23	R	IV	40 Y	F	II	155 CM	85 KG	34.3	LEFT KNEE SWELLING	EXCISION BIOPSY	60 MIN	11:20 AM
24	1663151	24	R	JS	19Y	M	I	170 CM	79 KG	25	TORTION TESTIS	ORCHIDOPEXY	45 MIN	12:15 PM
25	1652585	25	R	HS	23 Y	M	II	168 CM	63 KG	22.3	LEFT LEF WOUND	DEBRIDEMENT	60 MIN	4:15 PM
26	1513256	26	L	AK	60 Y	M,	II	170 CM	71 KG	23.8	RIGHT DIABETIC FOOT	DEBRIDEMENT	60 MIN	1:05 PM
27	15610521	27	R	IS	35 Y	M	II	170 CM	90 KG	28.5	DIABETIC FOOT ULCER	DEBRIDEMENT	45 MIN	4:00 PM
28	1271972	28	R	YS	41 Y	M	II	170 CM	70 KG	22.1	LEFT FOOT WOUND	SKIN GRAFTING	60 MIN	5:00 PM
29	1499264	29	L	MK	45 Y	F	II	163 CM	76 KG	29	FRACTURE BB LEFT LEG	EXFIX APPLICATION	60 MIN	8:45 AM
30	1519263	30	R	GS	40 Y	M	II	180 CM	80 KG	23.9	FRACTURE RIGHT TIBIA	EXFIX APPLICATION	45 MIN	2:00 PM
31	1244919	31	R	KS	30 Y	M	I	167 CM	79 KG	27.3	RIGHT LEG EXFIX INSITU	EXFIX READJUSTMENT	75 MIN	11:00 AM
32	1527233	32	R	JS	38 Y	M	II	180 CM	80 KG	23.9	RIGHT TESTICULAR MASS	RIGHT ORCHIDECTOMY	60 MIN	11:10 AM
33	1509845	33	L	PK	45 Y	F	II	163 CM	62 KG	22.7	CRUSH FOOT	DEBRIDEMENT K WIRING	120 MIN	10:08 AM
34	1501420	34	L	BK	44 Y	F	I	165 CM	70 KG	24.9	ANKLE EXFIX INSITU	EXFIX REMOVAL	150 MIN	12:40 PM
35	1527543	35	R	BS	29 Y	M	II	170 CM	65 KG	21.8	URETRIC CALCULUS	URS	45 MIN	10:35 AM
36	1514949	36	R	GS	33 Y	M	II	163 CM	58 KG	20.6	CROSS LEG FLAP INSITU	FLAP SEPARATION	75 MIN	11:30 AM
37	1511717	37	L	SS	29 Y	M	I	170 MIN	80 KG	25.3	LEFT KNEE INJURY	PCL REPAIR	120 MIN	12:45 PM
38	1536638	38	R	JS	40 Y	M	I	177 CM	70 KG	21.5	SCROTAL CYST	CYST EXCISIN	60 MIN	1:25 PM
39	1635457	39	R	GS	64 Y	M	II	170 CM	68 KG	22.8	PERIANAL ABSCESS	I&D	45 MIN	4:00 PM
40	1310387	40	R	SK	28 Y	F	II	165 CM	72 KG	25.6	RIGHT LEG PUS COLLECTION	I&D	45 MIN	4:00 PM
41	568591	41	L	SK	19 Y	F	I	160 CM	55 KG	20.8	GLUTEAL ABSCESS	I&D	75 MIN	2:02 PM
42	217535	42	L	SR	18 Y	M	I	168 CM	70 KG	24.8	LEFT VARICOCELE	VARICOCELECTOMY	60 MIN	1:12 PM
43	772670	43	R	A	33 Y	F	I	163 CM	62 KG	22.7	RIGHT URETRIC CALCULUS	URS	30 MIN	10:00 AM
44	1054451	44	R	VS	47 Y	M	II	177 CM	98 KG	30.1	RIGHT KNEE SWELLING	DEBRIDEMENT	90 MIN	1:00 PM
45	1509845	45	L	PK	45 Y	F	II	155 CM	58 KG	23.4	LEFT FOOT WOUND	SKIN GRAFTING	60 MIN	9:30 AM
46	1509845	46	L	PK	45 Y	F	II	165 CM	63 KG	22.4	LEFT FOOT CRUSH INJURY	LEFT FOOT DEBRIDEMENT	60 MIN	12:05 PM
47	1338626	47	R	LS	41 Y	M	II	180 CM	68 KG	20.3	LEG COMPARTMENT SYNDROME	FACIOTOMY	45 MIN	11;00 AM
48	1536141	48	L	RM	43 Y	M	I	167 CM	90 KG	31.1	EPIDIDYMAL CYST	CYST EXCISION	120 MIN	11:55 AM
49	1635457	49	R	GS	64 Y	M	II	170 CM	68 KG	22.8	PERIANAL ABSCESS	I&D	45 MIN	10:00 AM
50	1527990	50	L	SK	24 Y	M	I	170 CM	80 KG	26.8	LEG FLAP INSITU	FLAP READJUSTMENT	75 MIN	11:50 AM
51	24593	51	R	BR	56 Y	M	II	170 CM	76 KG	25.5	RECTAL PROLAPSE	RECTOPEXY	120 MIN	2:30 PM
52	1330193	52	L	AC	73 Y	M	II	170 CM	78 KG	26.1	PARAPHYMOSIS	CIRCUMCISION	45 MIN	9:30 AM
53	1656433	53	R	GS	75 Y	M	II	165 CM	67 KG	23.8	AVN HIP	HEMIARTHROPLASTY	105 MIN	10:10 AM
54	1342251	54	L	HS	30 Y	M	I	177 CM	76 KG	23.4	RIGHT FOOT GUNSHOT	DEBRIDEMENT	45 MIN	11:00 AM
55	1605026	55	R	DS	58 Y	M	I	165 CM	54 KG	19.2	ILIZAROV INSITU	ILIZAROV REMOVAL	45 MIN	12:15 PM
56	1338034	56	L	S	22 Y	M	I	165 CM	74 KG	26.3	RIGHT KNEE FOREIGN BODY	GORIEGN BODY REMOVAL	45 MIN	12:15 PM
57	1711575	57	R	KS	70 Y	F	II	163 CM	60 KG	22	HIP OA	THR	90 MIN	11:50 AM
58	1298962	58	L	GS	18 Y	M	I	168 CM	54 KG	18.6	FRACTURE TIBIA AND LEG WOUND	DEBRIDEMENT AND EXFIX READJUSTMENT	90 MIN	5:05 PM
59	1341127	59	L	PK	46 Y	F	II	163 CM	60 KG	22	OPEN WOUND RIGHT FOOT	DEBRIDEMENT	90 MIN	1:30 PM
60	1332427	60	L	MS	38 Y	M	I	170 CM	80 KG	25.3	OPEN WOUND RIGHT LEG	DEBRIDEMENT	60 MIN	5:05 PM
61	1638770	61	L	AS	41 Y	M	II	170 CM	120 KG	40.2	RIGHT FEMUR FRACTURE	FEMUR NAILING	90 MIN	9:15 AM
62	1643344	62	L	KS	23 Y	M	II	165 CM	48 KG	17.1	RIGHT FEMUR FRACTURE	FEMUR NAILING	120 MIN	12:15 PM
63	1585818	63	R	RS	62 Y	M	II	167 CM	57 KG	19.7	BPH	TURP	60 MIN	10:40 AM
64	1645267	64	L	AK	35 Y	F	II	158 CM	90 KG	35.1	RIGHT PCL TEAR	PCL REPAIR	60 MIN	1:40 PM
65	1709081	65	R	RP	55 Y	M	II	168 CM	110 KG	38	PERIANAL PAIN	CYSTOSCOPY	45 MIN	09:30
66	1711994	66	R	DK	20 Y	M	I	158 CM	45 KG	17.6	DJ STENT IN SITU	DJ STENT REMOVAL	45 MIN	3:45 PM
67	1691457	67	L	AB	53 Y	M	II	165 CM	60 KG	21.3	RIGHT LOWER LIMB INJURY	DEBRIDEMENT	120 MIN	6:45 PM
68	1708318	68	R	KK	24 Y	M	I	163 CM	66 KG	24.2	FIDTULA IN ANO	FISTULECTOMY	60 MIN	2:45 PM
69	1701225	69	L	NS	18 Y	F	I	163 CM	56 KG	20.5	OSTEOID OSTEOMA	RFA	60 MIN	12;30 PM
70	1712155	70	L	SK	39 Y	F	II	158 CM	78.5 KG	23.4	FISTULA IN ANO	FISTULECTOMY	60 MIN	4:20 PM

		TIME POINTS									
S.NO.	MRD.NO.	ONSET OF SENSORY LEVEL T8	MAX.SENSORY LEVEL ACHIEVED		SENSORY LEVEL T12 REGRESSION	MBS GRADE 2 ONSET	MAX.MOTOR BLOCK ACHIEVED		MBS GRADE 0 REGRESSION	TIME OF ONSET OF SENSORY BLOCK	TIME OF ONSET OF MOTOR BLOCK
1	1409602	12:44 PM	T4	12:48 PM	3:10 PM	12:44 PM	III	12:46:00 PM	2:40 PM	4 MIN	4 MIN
2	1404382	10:12 AM	T4	10:16 AM	1:10 PM	10:10 AM	III	10:12:00 AM	1:55 PM	4 MIN	4 MIN
3	1412184	1:16 PM	T6	1:18 PM	3:25 PM	1:14 PM	III	1:16:00 PM	3:55 PM	6 MIN	4 MIN
4	1450010	9:57 AM	T6	9:59:00 AM	11:55 AM	9:55AM	III	9:59:00 AM	11:30 AM	4 MIN	2 MIN
5	1476734	12:46 PM	T6	12:48 PM	2:40 PM	12:44 PM	III	12:46:00 PM	2:20 PM	6 MIN	4 MIN
6	1408710	11:58 AM	T6	12:00 PM	3:00 PM	11:58 AM	III	12:02:00 PM	3:45 PM	2 MIN	2 MIN
7	1483237	2:26 PM	T6	2:28 PM	4:20 PM	2:22 PM	III	2:24:00 PM	5:05 PM	6 MIN	2 MIN
8	1409616	10:09 AM	T4	10:11 AM	12:35 PM	10:07 AM	III	10:09:00 AM	1:10 PM	4 MIN	2 MIN
9	1485468	7:46 PM	T6	7:56 PM	9:55 PM	7:44 PM	III	7:46:00 PM	10:55 PM	6 MIN	4 MIN
10	225855	7:19 PM	T6	7:21:00 PM	10:00 PM	7:17 PM	III	7:19:00 PM	10:30 PM	4MIN	2MIN
11	1490563	1:54 PM	T6	1:56 PM	3:20 PM	1:52 PM	III	1:54:00 PM	4:05 PM	4 MIN	2 MIN
12	1481933	1:04 PM	T6	1:06 PM	3:15 PM	1:02 PM	III	1:04 PM	3:45 PM	4 MIN	2 MIN
13	1490208	3:36 PM	T4	3:38:00 PM	5:45 PM	3:32 PM	III	3:34 PM	6:00 PM	6 MIN	2MIN
14	1440815	9:34 AM	T6	9:36 PM	12:30 PM	9:32 AM	III	9:34 AM	1:15 PM	4 MIN	2 MIN
15	1480845	10:14 AM	T6	10:16:00 AM	12:55 PM	10:12 AM	III	10:14:00 AM	1:40 PM	4 MIN	2 MIN
16	1474400	1:10 PM	T6	1:14:00 PM	2:40 PM	1:08 PM	III	1:10:00 PM	3:35 PM	4 MIN	4 MIN
17	1491020	1:14 PM	T6	1:16:00 PM	3:10 PM	1:12 PM	III	1:12:00 PM	4:40 PM	4 MIN	2 MIN
18	1490317	10:39 AM	T6	10:43 AM	12:50 PM	10:39 AM	III	10:39:00 AM	1:05 PM	4 MIN	4 MIN
19	1491710	2:34 PM	T6	2:36:00 PM	5:30 PM	2:32 PM	III	2:34:00 PM	5:45 PM	4 MIN	2 MIN
20	1489985	2:19 PM	T6	2:21 PM	4:15 PM	2:17 PM	III	2:19 PM	4:45 PM	4 MIN	2 MIN
21	1499251	10:19 AM	T6	10:21 AM	12:45 PM	10:17 AM	III	10:17 AM	1:45 PM	4 MIN	2 MIN
22	1489985	10:28 AM	T6	10:30:00 AM	12:29 PM	10:24 AM	III	10:26 AM	12:59 PM	6 MIN	2 MIN
23	1511114	11:24 AM	T6	11:28:00 AM	1:35 PM	11:22 AM	III	11:24:00 AM	1:50 PM	4 MIN	2 MIN
24	1663151	12:19 PM	T6	12:21 PM	2:15 PM	12:19 PM	III	12:21 PM	2:30 PM	4 MIN	4 MIN
25	1652585	4:19 PM	T6	4:23 PM	6:15 PM	4:19 PM	III	4:21:00 PM	7:00 PM	4 MIN	4 MIN
26	1513256	1:09 PM	T6	1:11:00 PM	3:35 PM	1:07 PM	III	1:07:00 PM	4:20 PM	4 MIN	2 MIN
27	15610521	4:04 PM	T6	4:06:00 PM	5:45 PM	4:02 PM	III	4:04:00 PM	6:15 PM	4 MIN	2 MIN
28	1271972	5:04 PM	T6	5:06 PM	7:00 PM	5:02 PM	III	5:04:00 PM	7:15 PM	4 MIN	2 MIN
29	1499264	8:47 AM	T4	8:51:00 AM	11:00 AM	8:47 AM	III	8:49:00 AM	12:00 PM	2 MIN	2 MIN
30	1519263	2:04 PM	T6	2:06 PM	3:45 PM	2:02 PM	III	2:04:00 PM	4:15 PM	4 MIN	2 MIN
31	1244919	11:04 AM	T6	11:06:00 AM	1:00 PM	11:02 AM	III	11:06 AM	1:15 PM	4 MIN	2 MIN
32	1527233	11:16 AM	T6	11:18 AM	12:55 PM	11:12 AM	III	11:12 AM	1:25 PM	6 MIN	2 MIN
33	1509845	10:12 AM	T6	10:14:00 AM	12:53 PM	10:10 AM	III	10:12 AM	1:23 PM	4 MIN	2 MIN
34	1501420	12:44 PM	T6	12:46:00 PM	3:25 PM	12:42 PM	III	12:42 PM	3:55 PM	4 MIN	2 MIN
35	1527543	10:39 AM	T6	10:41:00 AM	12:20 PM	10:37 AM	III	10:41 AM	12:35 PM	4 MIN	2 MIN
36	1514949	11:36 AM	T6	11:38 AM	1:30 PM	11:32 AM	III	11:34 AM	1:45 PM	6 MIN	2 MIN
37	1511717	12:58 PM	T6	1:00 PM	3:40 PM	12:56 PM	III	12:56 PM	4:10 PM	4 MIN	2 MIN
38	1536638	1:29 PM	T6	1:33 PM	3:10 PM	1:27 PM	III	1:29 PM	3:40 PM	4 MIN	2 MIN
39	1635457	4:04 PM	T6	4:06 PM	6:15 PM	4:02 PM	III	4:06 PM	6:00 PM	4 MIN	2 MIN
40	1310387	4:04 PM	T6	4:06:00 PM	5:45 PM	4:02 PM	III	4:04:00 PM	6:15 PM	4 MIN	2 MIN
41	568591	2:06 PM	T6	2:08 PM	4:32 PM	2:04 PM	III	2:04 PM	5:02 PM	4 MIN	2 MIN
42	217535	1:16 PM	T6	1:18 PM	3:27 PM	1:14 PM	III	1:14 PM	4:12 PM	4 MIN	2 MIN
43	772670	10:04 AM	T6	10:06 AM	11:45 AM	10:02 AM	III	10:04 AM	12:15 PM	4 MIN	2 MIN
44	1054451	1:06 PM	T6	1:08 PM	3:00 PM	1:02 PM	III	1:02 PM	3:30 PM	6 MIN	2 MIN
45	1509845	9:34 AM	T6	9:36 AM	11:45 AM	9:32 AM	III	9:34 AM	12:30 PM	4 MIN	2 MIN
46	1509845	12:09 PM	T6	12:11 PM	2 ;20 PM	12 ;07 PM	III	12 ;07 PM	3 ;05 PM	4 MIN	2 MIN
47	1338626	11:04 AM	T6	11:06 AM	12:45 PM	11:02 AM	III	11:06 AM	1:30 PM	4 MIN	2 MIN
48	1536141	11:59 AM	T6	12:03 PM	2:25 PM	11:57 PM	III	11:59 PM	3:10 PM	4 MIN	2 MIN
49	1635457	10:04 AM	T6	10:06 AM	12:15 PM	10:02 AM	III	10:06 AM	12:15 PM	4 MIN	2 MIN
50	1527990	11:54 AM	T6	11:56:00	2:20 PM	11:52 AM	III	11:54 AM	3:05 PM	4 MIN	2 MIN
51	24593	2:36 PM	T6	2:38 PM	4:45 PM	2:32 PM	III	2:34 PM	5:15 PM	6 MIN	2 MIN
52	1330193	9:34 AM	T6	9:36 AM	12:00 AM	9:32 AM	III	9:32 AM	12:30 PM	4 MIN	2 MIN
53	1656433	10:16 AM	T6	10:18 AM	12:25 PM	10:12 AM	III	10:14 AM	12:40 PM	6 MIN	2 MIN
54	1342251	11:04 AM	T6	11:06AM	1:30 PM	11:02 AM	III	11:02 AM	2:15 PM	4 MIN	2 MIN
55	1605026	12:19 PM	T6	12:21 PM	2:30 PM	12:17 PM	III	12:19 PM	3:15 PM	4 MIN	2 MIN
56	1338034	12:17 PM	T6	12:19 PM	2:30 PM	12:17 PM	III	12:19 PM	3:15 PM	2 MIN	2 MIN
57	1711575	11;56 AM	T6	11:58 AM	2:05 PM	11:52 AM	III	11:54 AM	2:35 PM	6 MIN	2 MIN
58	1298962	5:09 PM	T6	5:11 PM	7:35 PM	5:07 PM	III	5:09 PM	8:20 PM	4 MIN	2 MIN
59	1341127	1:34 PM	T6	1 ;36 PM	3:45 PM	1:32 PM	III	1:34 PM	4:30 PM	4 MIN	2 MIN
60	1332427	5:07 PM	T6	5:09 PM	7:05 PM	5:07 PM	III	5:07 PM	7:50 PM	2 MIN	2 MIN
61	1638770	9:19 AM	T6	9:21 AM	11:45 AM	9:17 AM	III	9:19 AM	12:15 PM	4 MIN	2 MIN
62	1643344	12:19 PM	T6	12:21 PM	2:45 PM	12:17 PM	III	12:19 PM	3:30 PM	4 MIN	2 MIN
63	1585818	10:44 AM	T6	10:48 AM	12:40 PM	10:42 AM	III	10:44 AM	1:25 PM	4 MIN	2 MIN
64	1645267	1:42 PM	T6	1:44 PM	4:10 PM	1:42 PM	III	1:44 PM	4:55 PM	2 MIN	2 MIN
65	1709081	9:32 AM	T6	9:36 AM	11:30 AM	9:32 AM	III	9:36 AM	12:00 PM	2 MIN	2 MIN
66	1711994	3:51 PM	T6	3:53 PM	6:00 PM	3:47 PM	III	3:49 PM	18:30	6 MIN	2 MIN
67	1691457	6:49 PM	T6	6:51 PM	9:30 PM	6:47 PM	III	6:49 PM	10:00 PM	4 MIN	2 MIN
68	1708318	2:49 PM	T6	2:53 PM	4:30 PM	2:49 PM	III	2:51 PM	5:15 PM	4 MIN	4 MIN
69	1701225	12:32 PM	T6	12:34 PM	2:45 PM	12:32 PM	III	12:34 PM	15:15	2 MIN	2 MIN
70	1712155	4:24 PM	T6	4:26 PM	6:20 PM	4:22 PM	III	4:24 PM	7:05 PM	4 MIN	2 MIN

		TIME PERIODS (IN MINUTES)										
S.NO.	MRD.NO.	TIME TO REACH PEAK SENSORY LEVEL	TIME TO HIGHEST LEVEL OF MOTOR BLOCK	TIME TO ACHIEVE SENSORY REGRESSION TO T12 DERMATOME	TIME TO ACHIEVE COMPLETE MOTOR REGRESSION	DURATION OF ANALGESIA	BASELINE	0	2	4	6	8
1	1409602	8 MIN	6 MIN	105 MIN	120 MIN	420 MIN	116	114	118	109	103	96
2	1404382	8 MIN	4 MIN	165 MIN	227 MIN	195 MIN	86	96	95	96	93	90
3	1412184	8 MIN	6 MIN	135 MIN	165 MIN	210 MIN	117	116	88	85	86	82
4	1450010	6 MIN	6 MIN	122MIN	152 MIN	152MIN	88	95	92	92	97	97
5	1476734	8 MIN	6 MIN	120 MIN	135 MIN	180 MIN	70	68	66	64	63	69
6	1408710	4 MIN	6 MIN	185 MIN	230 MIN	540 MIN	82	88	82	83	84	81
7	1483237	8 MIN	4 MIN	120 MIN	165 MIN	210 MIN	78	70	77	75	71	68
8	1409616	6 MIN	4 MIN	150 MIN	195 MIN	225 MIN	88	82	88	78	82	81
9	1485468	10 MIN	6 MIN	135 MIN	195 MIN	165 MIN	57	64	60	61	59	58
10	225855	6 MIN	4 MIN	165 MIN	195 MIN	180 MIN	95	94	94	90	93	86
11	1490563	6 MIN	4 MIN	90 MIN	135 MIN	225 MIN	83	96	74	70	76	72
12	1481933	6 MIN	4 MIN	135 MIN	165 MIN	255 MIN	78	104	106	105	102	100
13	1490208	8 MIN	4 MIN	135 MIN	150 MIN	240 MIN	79	83	90	86	82	79
14	1440815	6 MIN	4 MIN	180 MIN	225 MIN	210 MIN	72	80	82	86	79	72
15	1480845	6 MIN	4 MIN	165 MIN	210 MIN	210 MIN	98	93	92	93	97	89
16	1474400	8 MIN	4 MIN	105 MIN	210 MIN	225 MIN	103	98	96	92	90	86
17	1491020	6 MIN	2 MIN	120 MIN	210 MIN	180 MIN	117	116	89	85	86	82
18	1490317	8 MIN	4 MIN	135 MIN	150 MIN	255 MIN	109	94	115	112	108	115
19	1491710	6 MIN	4 MIN	180 MIN	195 MIN	195 MIN	110	112	110	108	103	102
20	1489985	6 MIN	4 MIN	120 MIN	150 MIN	180 MIN	110	116	114	110	98	97
21	1499251	6 MIN	2 MIN	150 MIN	210 MIN	210 MIN	95	97	92	87	82	80
22	1489985	8 MIN	4 MIN	105 MIN	135 MIN	195 MIN	120	117	119	120	122	117
23	1511114	8 MIN	4 MIN	135 MIN	150 MIN	165 MIN	86	85	80	62	64	70
24	1663151	6 MIN	6 MIN	120 MIN	135 MIN	180 MIN	91	98	90	86	82	79
25	1652585	8 MIN	6 MIN	120 MIN	165 MIN	240 MIN	101	103	100	96	98	97
26	1513256	6 MIN	2 MIN	150 MIN	195 MIN	240 MIN	86	89	79	74	75	74
27	15610521	6 MIN	4 MIN	105 MIN	135 MIN	180 MIN	72	70	74	72	73	70
28	1271972	6 MIN	4 MIN	120 MIN	135 MIN	180 MIN	76	84	83	85	91	88
29	1499264	6 MIN	4 MIN	135 MIN	195 MIN	210 MIN	108	99	97	96	90	90
30	1519263	6 MIN	4 MIN	105 MIN	135 MIN	165 MIN	90	92	86	80	76	72
31	1244919	6 MIN	6 MIN	120 MIN	135 MIN	240 MIN	86	90	92	86	82	78
32	1527233	8 MIN	2 MIN	105 MIN	135 MIN	150 MIN	80	89	90	88	87	84
33	1509845	6 MIN	4 MIN	165 MIN	195 MIN	195 MIN	108	106	100	98	92	87
34	1501420	6 MIN	2 MIN	165 MIN	195 MIN	255 MIN	110	108	105	100	98	96
35	1527543	6 MIN	6 MIN	105 MIN	120 MIN	255 MIN	89	87	86	82	84	87
36	1514949	8 MIN	4 MIN	120 MIN	135 MIN	195 MIN	110	112	108	106	112	108
37	1511717	6 MIN	2 MIN	165 MIN	195 MIN	285 MIN	98	96	94	94	92	93
38	1536638	8 MIN	4 MIN	105 MIN	135 MIN	165 MIN	82	80	84	79	74	71
39	1635457	6 MIN	6 MIN	135 MIN	165 MIN	225 MIN	61	72	70	64	58	56
40	1310387	6 MIN	4 MIN	105 MIN	135 MIN	180 MIN	72	70	74	72	73	70
41	568591	6 MIN	2 MIN	150 MIN	180 MIN	210 MIN	102	103	98	92	96	94
42	217535	6 MIN	2 MIN	135 MIN	180 MIN	195 MIN	99	92	80	81	86	91
43	772670	6 MIN	4 MIN	105 MIN	135 MIN	195 MIN	82	87	78	76	72	69
44	1054451	8 MIN	2 MIN	120 MIN	150 MIN	165 MIN	74	75	75	71	72	80
45	1509845	6 MIN	4 MIN	135 MIN	180 MIN	195 MIN	92	98	84	80	82	86
46	1509845	6 MIN	2 MIN	135 MIN	180 MIN	195 MIN	110	112	98	92	86	82
47	1338626	6 MIN	6 MIN	105 MIN	150 MIN	165 MIN	80	94	85	86	83	85
48	1536141	8 MIN	4 MIN	150 MIN	195 MIN	240 MIN	65	67	64	65	60	62
49	1635457	6 MIN	6 MIN	135 MIN	135 MIN	150 MIN	88	95	92	92	97	97
50	1527990	6 MIN	4 MIN	150 MIN	195 MIN	240 MIN	90	86	92	86	90	92
51	24593	8 MIN	4 MIN	135 MIN	165 MIN	195 MIN	92	98	90	86	87	82
52	1330193	6 MIN	2 MIN	150 MIN	180 MIN	240 MIN	81	86	82	78	72	69
53	1656433	8 MIN	4 MIN	135 MIN	150 MIN	180 MIN	90	96	86	82	81	79
54	1342251	6 MIN	2 MIN	150 MIN	195 MIN	165 MIN	68	72	71	72	66	64
55	1605026	6 MIN	4 MIN	135 MIN	180 MIN	195 MIN	92	96	90	92	96	90
56	1338034	4 MIN	4 MIN	135 MIN	180 MIN	210 MIN	65	59	62	63	61	68
57	1711575	8 MIN	6 MIN	135 MIN	165 MIN	180 MIN	98	102	96	94	88	86
58	1298962	6 MIN	4 MIN	150 MIN	195 MIN	240 MIN	76	82	80	78	76	74
59	1341127	6 MIN	4 MIN	135 MIN	180 MIN	240 MIN	112	117	106	98	96	101
60	1332427	4 MIN	2 MIN	120 MIN	165 MIN	195 MIN	85	96	97	102	93	88
61	1638770	6 MIN	4 MIN	150 MIN	180 MIN	195 MIN	102	106	98	92	86	81
62	1643344	6 MIN	4 MIN	150 MIN	195 MIN	210 MIN	110	108	102	92	94	93
63	1585818	8 MIN	4 MIN	120 MIN	165 MIN	225 MIN	72	74	70	68	64	61
64	1645267	4 MIN	4 MIN	135 MINB	180 MIN	225 MIN	83	86	82	81	76	72
65	1709081	6 MIN	6 MIN	120 MIN	150 MIN	180 MIN	86	82	78	74	70	68
66	1711994	8 MIN	4 MIN	135 MIN	165 MIN	240 MIN	104	106	92	86	72	74
67	1691457	6 MIN	4 MIN	165 MIN	195 MIN	225 MIN	102	100	98	92	86	84
68	1708318	8 MIN	6 MIN	105 MIN	150 MIN	180 MIN	90	92	89	86	82	81
69	1701225	4 MIN	4 MIN	135 MIN	165 MIN	180 MIN	92	91	90	86	80	76
70	1712155	6 MIN	4 MIN	120 MIN	165 MIN	195 MIN	90	86	82	87	82	80

		HEART RATE																SBP(mm Hg)											
S.NO.	MRD.NO.	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180		BASELINE	0	2	4	6	8	10	15	20	25	30	45
1	1409602	91	82	86	94	98	92	-	-	-	-	-	-	-	-	-		126	132	136	130	128	129	126	121	118	120	123	119
2	1404382	92	86	83	79	84	85	83	-	-	-	-	-	-	-	-		153	150	143	141	141	133	131	134	134	135	138	138
3	1412184	81	86	88	76	75	68	74	73	73	-	-	-	-	-	-		124	129	123	123	124	123	120	116	119	123	120	115
4	1450010	96	91	88	80	78	80	-	-	-	-	-	-	-	-	-		112	117	114	118	124	126	119	115	113	112	115	120
5	1476734	68	70	68	73	66	-	-	-	-	-	-	-	-	-	-		123	121	126	128	134	139	136	135	128	129	126	-
6	1408710	83	82	80	79	81	70	72	-	-	-	-	-	-	-	-		155	152	153	150	152	153	143	141	136	140	147	134
7	1483237	65	67	69	68	65	63	67	-	-	-	-	-	-	-	-		132	124	122	120	122	120	119	121	118	113	110	113
8	1409616	81	72	69	68	68	69	72	67	63	-	-	-	-	-	-		158	152	137	137	144	141	136	130	123	128	116	127
9	1485468	59	56	54	53	51	52	54	-	-	-	-	-	-	-	-		110	123	123	110	107	108	110	112	112	112	110	105
10	225855	89	71	88	79	73	74	71	80	82	83	76	70	72	70	-		63	76	79	63	52	58	60	60	67	62	60	62
11	1490563	68	66	69	71	73	70	-	-	-	-	-	-	-	-	-		135	135	128	126	125	110	90	126	112	120	123	121
12	1481933	98	90	92	97	90	-	-	-	-	-	-	-	-	-	-		100	130	126	121	118	116	118	120	123	119	121	-
13	1490208	78	72	74	76	78	-	-	-	-	-	-	-	-	-	-		156	160	150	150	148	149	147	145	146	144	146	-
14	1440815	76	78	80	82	80	78	76	72	74	-	-	-	-	-	-		108	105	107	102	109	110	108	106	111	113	109	107
15	1480845	92	90	92	87	90	89	82	87	84	89	90	-	-	-	-		140	142	138	136	135	137	140	138	136	141	138	136
16	1474400	90	82	83	92	98	90	-	-	-	-	-	-	-	-	-		130	128	116	90	103	108	110	91	109	107	110	113
17	1491020	81	86	88	76	75	68	74	73	-	-	-	-	-	-	-		124	129	123	123	124	123	120	116	119	123	120	115
18	1490317	111	102	96	91	85	82	86	80	79	78	79	-	-	-	-		138	138	151	150	147	146	132	136	130	132	127	126
19	1491710	101	103	90	86	84	84	82	78	76	77	82	84	86	89	84		150	152	156	149	148	156	147	143	140	136	138	139
20	1489985	98	100	101	97	98	102	101	102	98	-	-	-	-	-	-		128	119	121	116	114	122	123	121	119	118	120	119
21	1499251	79	82	81	86	82	80	76	74	74	72	74	76	-	-	-		127	130	126	108	90	109	121	100	92	108	112	118
22	1489985	108	95	97	92	88	86	88	87	-	-	-	-	-	-	-		130	123	118	115	110	102	105	112	112	118	120	123
23	1511114	76	79	82	86	83	86	82	-	-	-	-	-	-	-	-		128	129	119	90	110	116	112	120	123	120	123	-
24	1663151	76	77	72	71	76	80	-	-	-	-	-	-	-	-	-		150	142	152	149	158	142	159	161	127	146	149	137
25	1652585	92	86	88	84	81	79	78	-	-	-	-	-	-	-	-		126	130	121	116	101	92	116	112	122	121	117	120
26	1513256	76	72	68	64	68	69	72	-	-	-	-	-	-	-	-		150	152	146	140	142	140	136	132	130	132	138	126
27	15610521	68	66	67	68	64	63	-	-	-	-	-	-	-	-	-		130	126	110	102	98	94	101	110	116	114	118	116
28	1271972	77	74	80	82	78	72	76	-	-	-	-	-	-	-	-		133	125	116	106	110	112	116	123	121	118	121	126
29	1499264	88	82	81	79	74	72	70	-	-	-	-	-	-	-	-		150	146	140	142	138	139	140	138	136	134	138	137
30	1519263	70	68	64	69	72	78	-	-	-	-	-	-	-	-	-		130	126	127	128	122	118	116	110	118	122	124	123
31	1244919	76	72	71	73	76	73	72	78	-	-	-	-	-	-	-		126	130	126	123	128	126	119	120	126	130	129	122
32	1527233	82	80	80	79	76	70	-	-	-	-	-	-	-	-	-		130	132	128	126	132	130	128	126	130	128	131	130
33	1509845	84	79	74	72	74	76	72	80	75	78	80	-	-	-	-		140	138	130	132	127	125	128	126	123	125	130	136
34	1501420	98	93	94	96	91	90	88	86	89	91	90	87	88	-	-		140	148	132	118	102	98	104	112	116	109	110	112
35	1527543	88	80	79	74	75	76	-	-	-	-	-	-	-	-	-		130	132	130	122	119	112	119	121	123	126	124	128
36	1514949	107	102	98	96	91	98	102	108	-	-	-	-	-	-	-		120	122	126	118	116	112	114	118	109	110	112	118
37	1511717	90	89	93	94	96	92	91	93	96	97	98	-	-	-	-		140	142	146	140	142	143	140	139	137	139	138	136
38	1536638	73	76	72	81	82	84	86	-	-	-	-	-	-	-	-		130	132	134	128	126	120	121	126	120	123	126	121
39	1635457	60	64	61	62	65	63	-	-	-	-	-	-	-	-	-		138	140	126	112	108	110	116	110	112	122	120	124
40	1310387	68	66	67	68	64	63	-	-	-	-	-	-	-	-	-		130	126	110	102	98	94	101	110	116	114	118	116
41	568591	90	92	87	82	80	78	-	-	-	-	-	-	-	-	-		126	122	121	128	124	110	108	112	110	113	116	109
42	217535	93	81	85	87	82	90	86	-	-	-	-	-	-	-	-		122	124	114	110	109	117	121	112	109	98	112	116
43	772670	71	74	72	76	70	-	-	-	-	-	-	-	-	-	-		126	128	121	116	108	110	112	118	113	115	119	-
44	1054451	82	76	68	72	78	76	82	80	81	-	-	-	-	-	-		136	148	110	91	94	106	110	108	104	109	112	118
45	1509845	80	82	79	80	82	77	87	-	-	-	-	-	-	-	-		140	142	138	132	136	140	138	136	130	132	125	121
46	1509845	84	80	81	84	86	89	90	-	-	-	-	-	-	-	-		140	140	136	132	130	132	136	140	142	136	132	134
47	1338626	78	72	78	81	84	87	-	-	-	-	-	-	-	-	-		130	151	135	130	125	108	98	122	116	125	121	130
48	1536141	63	62	66	64	62	61	62	65	57	63	70	-	-	-	-		128	125	120	119	117	119	116	118	121	123	127	123
49	1635457	96	91	88	80	78	80	-	-	-	-	-	-	-	-	-		112	117	114	118	124	126	119	115	113	112	115	120
50	1527990	96	92	90	87	81	86	70	76	-	-	-	-	-	-	-		126	120	122	119	122	123	126	125	124	122	121	119
51	24593	80	82	84	81	76	72	70	71	72	74	76	-	-	-	-		140	148	140	116	102	98	108	116	118	120	136	130
52	1330193	68	67	64	70	72	70	-	-	-	-	-	-	-	-	-		140	143	138	136	132	128	124	121	123	128	125	126
53	1656433	76	72	71	67	64	70	76	73	74	76	-	-	-	-	-		130	136	128	121	124	120	116	122	118	116	119	121
54	1342251	60	57	61	60	63	62	-	-	-	-	-	-	-	-	-		143	146	150	148	145	139	136	140	138	146	139	140
55	1605026	92	96	87	82	80	84	-	-	-	-	-	-	-	-	-		140	142	136	132	124	116	109	112	118	115	123	120
56	1338034	66	69	58	65	69	72	-	-	-	-	-	-	-	-	-		133	127	130	132	126	130	130	132	135	120	130	132
57	1711575	82	80	78	74	72	71	73	74	76	-	-	-	-	-	-		146	142	132	128	116	102	97	109	112	119	126	122
58	1298962	76	72	73	88	69	70	70	72	73	-	-	-	-	-	-		128	136	130	132	128	130	130	128	124	124	132	134
59	1341127	97	98	94	92	98	96	97	96	98	-	-	-	-	-	-		126	123	120	116	123	125	121	121	118	123	116	124
60	1332427	91	89	91	96	92	91	89	-	-	-	-	-	-	-	-		112	129	123	126	125	140	146	135	136	122	115	126
61	1638770	78	76	72	74	70	72	73	79	81	-	-	-	-	-	-		132	136	121	116	102	97	108	112	123	124	120	128
62	1643344	89	87	84	83	86	81	80	83	86	85	86	-	-	-	-		118	121	108	98	103	110	112	118	116	121	123	119
63	1585818	62	63	67	66	68	70	71	-	-	-	-	-	-	-	-		140	142	136	124	112	98	111	123	121	126	130	128
64	1645267	69	65	67	71	73	74	77	-	-	-	-	-	-	-	-		130	132	130	122	118	116	121	125	126	123	120	122
65	1709081	71	73	76	72	74	76	-	-	-	-	-	-	-	-	-		146	148	130	116	102	97	112	118	123	121	124	130
66	1711994	71	73	74	76	78	81	-	-	-	-	-	-	-	-	-		110	112	108	102	98	100	103	106	108	110	107	109
67	1691457	80	76	78	72	71	73	74	76	70	72	73	-	-	-	-		136	132	130	128	124	120	116	112	118	120	121	123
68	1708318	76	74	76	78	81	83	84	-	-	-	-	-	-	-	-		126	130	121	116	101	97	110	113	122	127	123	124
69	1701225	72	71	69	65	68	72	75	-	-	-	-	-	-	-	-		110	112	108	92	98	104	110	112	108	106	107	110
70	1712155	76	72	73	76	71	76	72	-	-	-	-	-	-	-	-		130	132	132	123	116	118	120	123	125	127	124	122

											DBP(mm Hg)																			
S.NO.	MRD.NO.	60	75	90	105	120	135	150	165	180	BASELINE	0	2	4	6	8	10	15	20	25	30	45	60	75	90	105	120	135	150
1	1409602	-	-	-	-	-	-	-	-	-	86	78	72	79	80	73	74	76	78	79	72	70	-	-	-	-	-	-	-
2	1404382	140	-	-	-	-	-	-	-	-	89	80	83	80	79	78	76	80	77	85	78	79	80	-	-	-	-	-	-
3	1412184	115	116	115	-	-	-	-	-	-	72	83	71	76	72	76	70	71	72	69	75	74	76	73	75	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	79	81	82	84	91	89	83	81	78	83	88	82	-	-	-	-	-	-	-
5	1476734	-	-	-	-	-	-	-	-	-	79	84	80	82	79	83	81	81	80	83	73	-	-	-	-	-	-	-	-
6	1408710	138	-	-	-	-	-	-	-	-	89	107	84	80	83	86	86	85	84	82	87	79	80	-	-	-	-	-	-
7	1483237	119	-	-	-	-	-	-	-	-	73	86	75	81	73	70	72	70	71	68	69	69	71	-	-	-	-	-	-
8	1409616	121	121	116	-	-	-	-	-	-	97	95	85	85	93	92	87	88	83	79	75	80	76	84	83	-	-	-	-
9	1485468	109	-	-	-	-	-	-	-	-	59	84	54	58	62	58	50	52	56	49	52	52	53	-	-	-	-	-	-
10	225855	78	67	70	72	60	70	77	72	-	63	76	79	63	52	58	60	60	67	62	60	62	78	67	70	72	60	70	77
11	1490563	-	-	-	-	-	-	-	-	-	90	99	77	78	77	63	58	70	67	65	62	64	-	-	-	-	-	-	-
12	1481933	-	-	-	-	-	-	-	-	-	70	80	72	70	71	76	72	81	82	80	78	-	-	-	-	-	-	-	-
13	1490208	-	-	-	-	-	-	-	-	-	100	110	92	90	86	90	96	97	98	96	98	-	-	-	-	-	-	-	-
14	1440815	110	108	106	-	-	-	-	-	-	70	72	70	68	72	70	76	72	76	70	62	68	62	65	68	-	-	-	-
15	1480845	130	126	131	130	132	-	-	-	-	80	78	81	76	77	79	78	77	80	80	79	71	70	68	72	68	70	-	-
16	1474400	-	-	-	-	-	-	-	-	-	90	86	80	60	52	60	62	50	65	63	64	77	-	-	-	-	-	-	-
17	1491020	116	115	-	-	-	-	-	-	-	72	83	71	76	72	76	76	70	71	72	69	75	74	76	-	-	-	-	-
18	1490317	128	129	128	130	132	-	-	-	-	95	90	85	80	67	66	72	70	71	67	68	62	70	72	80	70	72	-	-
19	1491710	140	142	139	137	138	140	143	146	138	87	82	90	86	87	80	74	79	82	78	80	82	80	81	79	77	79	78	80
20	1489985	125	127	129	-	-	-	-	-	-	79	78	70	69	62	70	72	69	65	76	79	65	61	68	67	-	-	-	-
21	1499251	126	121	123	118	115	127	-	-	-	77	82	79	62	60	68	70	52	58	59	62	70	72	70	72	76	70	72	-
22	1489985	121	120	-	-	-	-	-	-	-	80	78	70	72	70	61	68	71	75	72	69	68	70	69	-	-	-	-	-
23	1511114	-	-	-	-	-	-	-	-	-	68	65	62	60	70	72	76	82	85	88	82	77	80	-	-	-	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	70	71	69	77	89	95	77	82	80	66	75	70	-	-	-	-	-	-	-
25	1652585	119	-	-	-	-	-	-	-	-	82	86	80	76	68	56	76	72	76	70	72	71	74	-	-	-	-	-	-
26	1513256	130	-	-	-	-	-	-	-	-	86	87	82	80	86	81	78	72	71	74	72	71	70	-	-	-	-	-	-
27	15610521	-	-	-	-	-	-	-	-	-	86	80	79	62	61	62	64	68	70	72	71	70	-	-	-	-	-	-	-
28	1271972	115	-	-	-	-	-	-	-	-	91	73	86	78	82	76	78	81	85	88	87	81	70	-	-	-	-	-	-
29	1499264	135	-	-	-	-	-	-	-	-	100	98	96	90	82	84	80	89	86	82	81	80	79	-	-	-	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	90	86	82	80	81	86	82	86	81	79	80	81	-	-	-	-	-	-	-
31	1244919	116	118	-	-	-	-	-	-	-	78	72	76	72	70	71	76	78	72	86	82	79	72	72	-	-	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	80	81	76	80	84	79	72	76	71	70	67	80	-	-	-	-	-	-	-
33	1509845	128	128	130	129	132	-	-	-	-	72	76	70	74	67	70	72	70	68	72	78	72	70	67	71	76	78	-	-
34	1501420	123	124	120	118	121	123	119	-	-	90	96	80	76	69	60	68	78	72	76	76	70	72	70	71	68	72	73	70
35	1527543	-	-	-	-	-	-	-	-	-	82	80	76	70	72	76	70	72	76	72	70	76	-	-	-	-	-	-	-
36	1514949	122	120	-	-	-	-	-	-	-	80	86	80	76	72	76	74	70	71	74	70	72	71	82	-	-	-	-	-
37	1511717	140	143	140	143	144	-	-	-	-	90	90	98	92	90	92	91	86	82	88	81	82	81	83	82	83	81	-	-
38	1536638	126	-	-	-	-	-	-	-	-	86	84	80	79	72	81	82	81	80	78	79	82	81	-	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	72	76	70	68	70	71	68	61	64	70	68	62	-	-	-	-	-	-	-
40	1310387	-	-	-	-	-	-	-	-	-	86	80	79	62	61	62	64	68	70	72	71	70	-	-	-	-	-	-	-
41	568591	-	-	-	-	-	-	-	-	-	60	63	56	60	62	60	58	62	56	60	62	62	-	-	-	-	-	-	-
42	217535	120	-	-	-	-	-	-	-	-	86	80	67	68	64	69	72	-	61	64	60	62	60	67	-	-	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	87	82	80	81	78	72	73	75	70	71	72	-	-	-	-	-	-	-	-
44	1054451	123	121	120	-	-	-	-	-	-	74	92	60	55	60	70	72	69	76	71	68	71	86	80	72	-	-	-	-
45	1509845	130	-	-	-	-	-	-	-	-	90	92	90	77	72	78	71	76	72	77	69	70	69	-	-	-	-	-	-
46	1509845	134	-	-	-	-	-	-	-	-	92	94	90	92	86	81	83	80	83	84	80	82	80	-	-	-	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	84	102	88	78	76	62	58	68	73	76	69	78	-	-	-	-	-	-	-
48	1536141	125	123	121	124	122	-	-	-	-	80	76	79	72	78	72	69	67	69	61	63	71	84	91	87	86	76	-	-
49	1635457	-	-	-	-	-	-	-	-	-	79	81	82	84	91	89	83	81	78	83	88	82	-	-	-	-	-	-	-
50	1527990	116	119	-	-	-	-	-	-	-	89	86	84	78	69	62	67	71	72	73	70	72	-	-	-	-	-	-	-
51	24593	140	136	132	130	128	-	-	-	-	92	93	90	82	71	68	62	68	62	71	72	69	63	71	68	67	62	-	-
52	1330193	-	-	-	-	-	-	-	-	-	92	98	98	90	86	81	78	72	70	73	71	73	-	-	-	-	-	-	-
53	1656433	123	121	124	126	-	-	-	-	-	70	74	70	71	73	74	76	70	68	64	65	70	71	72	76	74	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	92	89	90	89	92	83	83	81	73	87	83	82	-	-	-	-	-	-	-
55	1605026	-	-	-	-	-	-	-	-	-	90	93	82	86	82	81	79	76	70	72	73	75	-	-	-	-	-	-	-
56	1338034	-	-	-	-	-	-	-	-	-	87	85	76	79	80	62	64	71	66	71	64	71	-	-	-	-	-	-	-
57	1711575	123	128	130	-	-	-	-	-	-	92	96	87	82	81	79	62	68	71	74	78	82	81	83	84	-	-	-	-
58	1298962	136	130	128	-	-	-	-	-	-	74	74	72	74	74	76	66	67	64	66	68	68	70	76	67	-	-	-	-
59	1341127	128	123	125	-	-	-	-	-	-	89	76	81	76	87	82	76	79	78	74	76	82	84	74	82	-	-	-	-
60	1332427	125	-	-	-	-	-	-	-	-	70	58	56	57	61	66	67	60	57	60	60	57	61	-	-	-	-	-	-
61	1638770	131	130	129	-	-	-	-	-	-	79	82	72	69	62	63	67	62	68	71	69	68	72	76	70	-	-	-	-
62	1643344	114	116	123	120	123	-	-	-	-	72	70	63	60	62	67	65	64	63	68	73	68	62	67	61	68	64	-	-
63	1585818	126	-	-	-	-	-	-	-	-	90	93	82	70	66	60	62	68	66	67	64	63	69	-	-	-	-	-	-
64	1645267	121	-	-	-	-	-	-	-	-	76	78	72	67	62	60	63	65	67	63	68	71	70	-	-	-	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	89	80	72	68	60	61	63	67	68	66	69	71	-	-	-	-	-	-	-
66	1711994	-	-	-	-	-	-	-	-	-	80	82	76	71	69	60	61	64	62	61	63	60	-	-	-	-	-	-	-
67	1691457	126	128	124	126	122	-	-	-	-	70	71	73	70	69	67	63	62	67	65	66	67	63	67	67	68	63	-	-
68	1708318	120	-	-	-	-	-	-	-	-	82	81	78	70	68	62	67	63	64	65	69	71	70	-	-	-	-	-	-
69	1701225	108	-	-	-	-	-	-	-	-	72	70	69	60	61	63	64	68	69	71	70	68	68	-	-	-	-	-	-
70	1712155	120	-	-	-	-	-	-	-	-	78	76	72	74	70	68	69	72	74	73	74	75	76	-	-	-	-	-	-

		INTRAOPERATIVE MONITORING (MINUTES)																												
				MAP(mm Hg)																										
S.NO.	MRD.NO.	165	180	BASELINE	0	2	4	6	8	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180	BASELINE	0	2	4	6
1	1409602	-	-	99	99	96	93	96	96	92	91	91	91	93	89	-	-	-	-	-	-	-	-	-	99	99	99	100	100
2	1404382	-	-	114	107	101	103	104	98	97	97	92	103	101	99	106	-	-	-	-	-	-	-	-	97	98	98	98	98
3	1412184	-	-	92	101	90	92	92	91	87	89	89	87	90	97	91	90	88	-	-	-	-	-	-	99	97	100	100	100
4	1450010	-	-	101	94	99	96	105	106	99	93	92	98	98	97	-	-	-	-	-	-	-	-	-	98	98	98	97	97
5	1476734	-	-	94	100	95	97	105	104	102	101	100	101	97	-	-	-	-	-	-	-	-	-	-	99	98	98	98	99
6	1408710	-	-	124	128	110	103	106	108	105	106	103	105	104	104	106	-	-	-	-	-	-	-	-	99	98	98	99	99
7	1483237	-	-	102	107	91	94	88	89	88	87	87	83	86	85	87	-	-	-	-	-	-	-	-	98	97	98	99	99
8	1409616	-	-	117	118	104	107	109	114	108	104	99	92	99	96	98	98	96	-	-	-	-	-	-	99	98	99	99	98
9	1485468	-	-	80	97	77	75	86	80	70	79	85	77	79	81	77	-	-	-	-	-	-	-	-	100	99	99	100	100
10	225855	72	-	76	95	95	80	85	83	78	77	81	79	77	77	90	86	86	84	83	85	90	85	-	97	99	100	99	99
11	1490563	-	-	106	113	104	102	100	79	69	89	82	83	82	83	-	-	-	-	-	-	-	-	-	98	97	98	99	98
12	1481933	-	-	80	97	90	87	87	89	87	94	96	93	92	-	-	-	-	-	-	-	-	-	-	100	99	99	99	99
13	1490208	-	-	119	127	111	110	107	110	113	113	114	112	114	-	-	-	-	-	-	-	-	-	-	99	100	99	99	98
14	1440815	-	-	82	83	82	79	84	83	87	83	88	84	78	81	78	79	81	-	-	-	-	-	-	99	99	99	98	98
15	1480845	-	-	100	99	100	96	96	98	99	103	99	105	99	93	90	87	92	89	91	-	-	-	-	98	97	98	98	97
16	1474400	-	-	103	100	92	70	69	76	78	64	80	78	79	89	-	-	-	-	-	-	-	-	-	100	99	99	98	99
17	1491020	-	-	92	101	90	92	92	91	87	89	87	90	97	91	90	88	-	-	-	-	-	-	-	99	98	99	98	98
18	1490317	-	-	106	106	107	104	90	93	92	92	91	89	87	83	89	91	96	90	92	-	-	-	-	99	99	98	98	99
19	1491710	83	86	108	105	112	107	107	105	98	97	101	97	99	101	100	101	99	97	99	99	101	104	103	97	97	98	98	99
20	1489985	-	-	95	92	87	85	79	87	89	86	83	90	93	83	82	90	88	-	-	-	-	-	-	97	97	98	98	98
21	1499251	-	-	89	98	95	77	70	82	87	68	69	75	79	86	90	87	89	90	85	90	-	-	-	98	97	98	98	98
22	1489985	-	-	80	95	86	92	83	76	80	85	89	87	86	86	87	86	-	-	-	-	-	-	-	99	99	99	98	98
23	1511114	-	-	88	86	81	70	83	87	88	95	98	101	98	91	94	-	-	-	-	-	-	-	-	99	98	97	98	98
24	1663151	-	-	108	104	99	97	115	107	99	101	99	95	106	93	-	-	-	-	-	-	-	-	-	100	100	99	99	98
25	1652585	-	-	97	101	94	89	79	68	89	85	91	87	87	87	89	-	-	-	-	-	-	-	-	98	98	97	98	97
26	1513256	-	-	107	109	103	100	105	101	97	92	91	93	94	89	90	-	-	-	-	-	-	-	-	99	99	99	98	98
27	15610521	-	-	101	95	89	75	73	73	76	82	85	86	87	85	-	-	-	-	-	-	-	-	-	100	99	98	99	98
28	1271972	-	-	105	90	96	87	91	88	91	95	97	98	98	96	85	-	-	-	-	-	-	-	-	99	98	98	98	99
29	1499264	-	-	117	114	111	107	101	102	100	105	103	99	100	99	98	-	-	-	-	-	-	-	-	100	100	98	99	98
30	1519263	-	-	103	99	97	96	95	97	93	94	93	93	95	95	-	-	-	-	-	-	-	-	-	99	98	99	98	98
31	1244919	-	-	94	91	93	89	89	89	90	92	90	101	98	93	87	87	-	-	-	-	-	-	-	99	98	99	99	98
32	1527233	-	-	97	98	93	95	100	96	91	93	91	89	88	97	-	-	-	-	-	-	-	-	-	98	98	98	99	99
33	1509845	-	-	95	97	90	93	87	88	91	89	86	90	95	93	89	91	91	94	96	-	-	-	-	99	98	98	98	97
34	1501420	-	-	107	113	97	90	80	73	80	92	87	87	87	84	89	88	87	85	88	90	86	-	-	100	100	99	98	98
35	1527543	-	-	98	97	94	87	88	88	86	88	92	90	88	93	-	-	-	-	-	-	-	-	-	99	98	98	97	98
36	1514949	-	-	93	98	95	90	87	88	87	86	84	86	84	87	88	95	-	-	-	-	-	-	-	100	100	99	99	98
37	1511717	-	-	107	107	114	108	107	109	107	104	100	103	100	100	101	103	101	103	102	-	-	-	-	97	97	99	98	98
38	1536638	-	-	101	100	98	95	90	94	95	96	93	93	95	95	96	-	-	-	-	-	-	-	-	100	100	100	99	99
39	1635457	-	-	94	97	88	83	83	84	84	77	80	87	85	83	-	-	-	-	-	-	-	-	-	97	98	98	97	98
40	1310387	-	-	101	95	89	75	73	73	76	82	85	86	87	85	-	-	-	-	-	-	-	-	-	100	99	98	99	98
41	568591	-	-	82	83	78	83	83	77	75	79	74	78	80	78	-	-	-	-	-	-	-	-	-	99	99	98	98	98
42	217535	-	-	97	96	85	82	79	86	89	79	84	73	79	79	85	-	-	-	-	-	-	-	-	99	98	98	98	99
43	772670	-	-	100	97	94	93	88	85	86	89	84	86	87	-	-	-	-	-	-	-	-	-	-	99	98	98	99	99
44	1054451	-	-	95	115	77	72	71	82	85	82	85	84	83	87	98	94	88	-	-	-	-	-	-	98	99	98	98	98
45	1509845	-	-	107	109	106	95	93	99	93	96	91	95	88	87	89	-	-	-	-	-	-	-	-	100	100	99	100	100
46	1509845	-	-	108	109	105	105	101	98	101	100	103	101	97	33	98	-	-	-	-	-	-	-	-	98	97	98	99	99
47	1338626	-	-	99	123	112	106	98	84	74	86	93	98	92	106	-	-	-	-	-	-	-	-	-	99	98	98	98	98
48	1536141	-	-	96	92	93	88	91	88	85	84	86	82	84	88	98	102	98	99	91	-	-	-	-	100	99	98	99	99
49	1635457	-	-	101	94	99	96	105	106	99	93	92	98	98	96	-	-	-	-	-	-	-	-	-	99	99	98	98	99
50	1527990	-	-	101	97	97	92	87	82	87	87	86	88	88	88	85	88	-	-	-	-	-	-	-	98	99	99	98	98
51	24593	-	-	108	111	107	93	81	78	77	84	81	87	93	89	89	93	89	88	84	-	-	-	-	99	98	98	97	97
52	1330193	-	-	108	113	111	105	101	97	93	88	88	91	89	91	-	-	-	-	-	-	-	-	-	98	97	98	98	97
53	1656433	-	-	90	95	89	88	90	89	89	87	85	81	83	87	88	88	92	91	-	-	-	-	-	98	98	97	97	97
54	1342251	-	-	109	107	112	110	113	108	103	100	101	107	108	100	-	-	-	-	-	-	-	-	-	98	98	97	97	98
55	1605026	-	-	107	109	100	101	96	93	89	88	86	86	90	90	-	-	-	-	-	-	-	-	-	98	97	98	98	97
56	1338034	-	-	108	103	93	95	109	104	92	101	92	98	92	101	-	-	-	-	-	-	-	-	-	98	97	98	98	98
57	1711575	-	-	110	111	102	97	93	87	74	82	85	89	94	95	95	98	99	-	-	-	-	-	-	98	97	98	98	97
58	1298962	-	-	92	95	91	93	92	94	92	90	86	86	94	94	96	94	90	-	-	-	-	-	-	99	98	98	97	98
59	1341127	-	-	98	102	94	89	99	96	91	95	91	90	89	96	99	90	96	-	-	-	-	-	-	98	97	98	98	99
60	1332427	-	-	86	85	81	82	86	93	98	87	85	80	83	82	86	-	-	-	-	-	-	-	-	98	98	97	97	98
61	1638770	-	-	97	100	88	85	75	74	81	79	86	89	86	88	92	94	90	-	-	-	-	-	-	98	97	97	97	98
62	1643344	-	-	87	87	78	73	76	81	81	82	81	86	90	85	79	83	82	85	84	-	-	-	-	98	99	97	98	98
63	1585818	-	-	107	109	100	88	81	73	78	86	84	87	86	85	88	-	-	-	-	-	-	-	-	98	97	97	97	98
64	1645267	-	-	94	96	91	85	81	79	82	85	87	83	85	88	87	-	-	-	-	-	-	-	-	97	97	98	97	97
65	1709081	-	-	108	103	91	84	74	73	79	84	86	84	87	91	-	-	-	-	-	-	-	-	-	97	97	97	98	97
66	1711994	-	-	90	92	87	81	79	73	75	78	77	77	78	76	-	-	-	-	-	-	-	-	-	98	98	98	97	97
67	1691457	-	-	92	91	92	89	87	85	81	79	84	83	84	86	84	87	86	87	83	-	-	-	-	98	97	98	98	97
68	1708318	-	-	95	97	92	85	79	74	81	80	83	86	87	89	87	-	-	-	-	-	-	-	-	98	98	99	98	98
69	1701225	-	-	85	84	82	71	73	77	79	83	82	83	82	82	81	-	-	-	-	-	-	-	-	98	98	97	97	98
70	1712155	-	-	95	95	92	90	85	85	86	89	91	91	91	91	91	-	-	-	-	-	-	-	-	98	98	98	99	99

		SPO2 (%)																		LEVEL OF SENSORY BLOCKADE											
S.NO.	MRD.NO.	8	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180	BASELINE	0	2	4	6	8	10	15	20	25	30	45
1	1409602	100	100	100	100	99	99	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T4	T4	T4	T4	T4	T4	T4	T4
2	1404382	99	98	99	99	99	98	99	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T4	T4	T4	T4	T4	T4	T4
3	1412184	99	99	98	98	98	99	97	98	99	98	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
4	1450010	98	98	97	98	98	97	98	-	-	-	-	-	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
5	1476734	98	98	98	99	99	98	-	-	-	-	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	-
6	1408710	98	99	98	97	98	98	97	97	-	-	-	-	-	-	-	-	0	0	T8	T6	T6	T6	T6	T6	T6	T6	T6	T6
7	1483237	98	98	97	98	99	98	97	98	-	-	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
8	1409616	97	98	98	99	98	99	98	99	98	97	-	-	-	-	-	-	0	0	T10	T8	T4	T4	T4	T4	T4	T4	T4	T4
9	1485468	100	99	99	99	99	98	99	99	-	-	-	-	-	-	-	-	0	0	T12	T10	T8	T8	T6	T6	T6	T6	T6	T6
10	225855	98	98	97	98	98	98	99	98	97	97	98	98	98	97	98	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
11	1490563	98	97	97	98	98	98	99	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T8
12	1481933	98	98	99	99	98	99	-	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	-
13	1490208	98	98	99	98	98	98	-	-	-	-	-	-	-	-	-	-	0	0	T12	T10	T8	T4	T4	T4	T4	T4	T4	-
14	1440815	97	98	98	97	98	98	99	99	98	98	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
15	1480845	97	98	98	99	98	98	97	98	98	99	98	98	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
16	1474400	98	98	99	99	98	98	97	-	-	-	-	-	-	-	-	-	0	0	T12	T8	T8	T6	T6	T6	T6	T6	T6	T6
17	1491020	97	97	98	98	98	97	98	98	98	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
18	1490317	100	99	98	98	97	98	98	98	99	99	100	98	-	-	-	-	0	0	T10	T8	T8	T6	T6	T6	T6	T6	T6	T6
19	1491710	99	98	98	98	98	99	97	98	98	97	98	98	99	98	98	97	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
20	1489985	98	97	97	98	99	98	98	98	99	98	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
21	1499251	98	97	97	98	98	98	97	98	98	98	98	98	97	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
22	1489985	99	99	99	98	98	98	99	98	99	-	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
23	1511114	97	98	97	97	98	97	97	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T4	T4	T4	T4	T4	T4	T6
24	1663151	99	98	99	98	99	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T8
25	1652585	97	97	98	98	98	98	99	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T8	T6	T6	T6	T6	T6	T6	T8
26	1513256	98	98	99	98	98	99	98	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
27	15610521	98	98	99	99	98	98	99	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
28	1271972	98	98	98	98	99	98	98	97	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
29	1499264	98	99	99	98	98	99	98	99	-	-	-	-	-	-	-	-	0	0	T8	T6	T4	T4	T4	T4	T4	T4	T4	T4
30	1519263	99	98	98	99	98	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
31	1244919	98	99	99	98	98	98	99	99	98	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
32	1527233	99	98	99	98	98	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T10	T8	T6	T6	T6	T6	T6	T6	T6
33	1509845	98	97	98	98	97	98	98	97	98	98	97	98	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
34	1501420	97	98	97	98	98	99	99	98	98	97	98	99	98	98	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
35	1527543	98	97	98	97	98	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
36	1514949	98	98	99	98	99	99	98	98	99	-	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
37	1511717	99	97	98	97	99	98	97	98	98	97	99	98	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	6T	T6
38	1536638	98	99	98	99	98	98	99	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T4	T4	T4	T4	T4	T4	T6
39	1635457	97	98	98	98	97	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
40	1310387	98	98	99	99	98	98	99	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
41	568591	99	99	98	98	99	98	99	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
42	217535	99	98	98	97	98	98	98	99	-	-	-	-	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
43	772670	98	98	98	99	98	99	-	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	-
44	1054451	99	99	98	98	97	98	99	99	98	99	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
45	1509845	100	100	100	99	99	98	98	99	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
46	1509845	98	99	99	98	98	98	99	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
47	1338626	99	98	98	99	99	98	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
48	1536141	98	98	98	99	99	100	100	99	98	98	99	98	-	-	-	-	0	0	T12	T8	T8	T6	T6	T6	T6	T6	T6	T6
49	1635457	98	99	98	99	98	98	99	-	-	-	-	-	-	-	-	-	0	0	T12	T8	T6	T6	T6	T6	T6	T6	T6	T6
50	1527990	97	97	98	98	98	99	98	98	97	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
51	24593	97	98	98	97	98	98	97	97	98	98	98	97	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
52	1330193	98	97	98	97	98	97	97	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
53	1656433	98	98	98	97	97	97	98	98	98	97	98	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
54	1342251	98	97	98	97	98	98	97	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	-	-
55	1605026	98	98	98	98	97	97	98	-	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
56	1338034	97	98	98	97	98	99	98	-	-	-	-	-	-	-	-	-	0	0	T8	T6	T6	T6	T6	T6	T6	T6	T6	T6
57	1711575	97	98	98	97	98	99	98	97	98	98	98	-	-	-	-	-	0	0	T10	T10	T8	T6	T6	T6	T6	T6	T6	T6
58	1298962	98	97	98	98	98	97	98	98	98	99	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
59	1341127	99	98	98	97	98	98	98	98	97	98	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
60	1332427	98	98	97	97	98	98	98	97	-	-	-	-	-	-	-	-	0	0	T8	T6	T6	T6	T6	T6	T6	T6	T6	T6
61	1638770	97	97	98	98	98	97	97	98	98	98	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
62	1643344	97	98	98	97	99	98	98	98	97	98	98	97	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
63	1585818	98	98	97	97	97	96	96	97	-	-	-	-	-	-	-	-	0	0	T10	T8	T8	T6	T6	T6	T6	T6	T6	T6
64	1645267	97	98	98	98	99	98	97	98	-	-	-	-	-	-	-	-	0	0	T8	T6	T6	T6	T6	T6	T6	T6	T6	T6
65	1709081	97	98	98	97	97	98	98	-	-	-	-	-	-	-	-	-	0	0	T8	T8	T6	T6	T6	T6	T6	T6	T6	-
66	1711994	98	98	98	97	98	98	97	-	-	-	-	-	-	-	-	-	0	0	T12	T10	T8	T6	T6	T6	T6	T6	T6	T6
67	1691457	97	98	98	98	98	97	97	98	97	98	98	97	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6
68	1708318	97	97	98	98	98	97	98	99	-	-	-	-	-	-	-	-	0	0	T10	T8	T8	T6	T6	T6	T6	T6	T6	T6
69	1701225	98	97	99	98	98	97	98	98	-	-	-	-	-	-	-	-	0	0	T8	T6	T6	T6	T6	T6	T6	T6	T6	T6
70	1712155	98	98	98	97	98	97	98	98	-	-	-	-	-	-	-	-	0	0	T10	T8	T6	T6	T6	T6	T6	T6	T6	T6

												MODIFIED BROMAGE SCORE																		
S.NO.	MRD.NO.	60	75	90	105	120	135	150	165	180	BASELINE	0	2	4	6	8	10	15	20	25	30	45	60	75	90	105	120	135	150
1	1409602	-	-	-	-	-	-	-	-	-	0	0	i	ii	iii	iii	iii	iii	iii	iii	iii	iii	-	-	-	-	-	-	-
2	1404382	T6	-	-	-	-	-	-	-	-	0	0	ii	iii	iii	iii	iii	iii	iii	iii	iii	iii	iii	-	-	-	-	-	-
3	1412184	T6	T6	T8	-	-	-	-	-	-	0	0	I	II	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
5	1476734	-	-	-	-	-	-	-	-	-	0	0	I	II	III	III	III	III	III	III	III	-	-	-	-	-	-	-	-
6	1408710	T6	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
7	1483237	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
8	1409616	T6	T6	T6	-	-	-	-	-	-	0	0	II	III	iii	III	III	III	III	III	III	III	III	III	III	-	-	-	-
9	1485468	T6	-	-	-	-	-	-	-	-	0	0	I	II	iii	III	III	III	III	III	III	III	III	-	-	-	-	-	-
10	225855	T6	T6	T6	T6	T8	T8	T10	T12	-	0	0	II	III	III	III	III	III	III	iii	III	III	III	III	III	III	III	III	III
11	1490563	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
12	1481933	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	iii	III	-	-	-	-	-	-	-	-
13	1490208	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-	-
14	1440815	T6	T6	T8	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
15	1480845	T6	T6	T6	T8	T8	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
16	1474400	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-	-
17	1491020	T6	T8	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-
18	1490317	T6	T6	T8	T10	T10	-	-	-	-	0	0	I	III	III	III	III	III	III	III	iii	III	III	III	II	II	II	-	-
19	1491710	T6	T6	T6	T6	T6	T8	T8	T10	T12	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III
20	1489985	T6	T6	T8	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
21	1499251	T6	T8	T8	T8	T8	T10	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	II	-
22	1489985	T8	T8	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-
23	1511114	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	0	0	I	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
25	1652585	T8	-	-	-	-	-	-	-	-	0	0	I	II	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
26	1513256	T6	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
27	15610521	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
28	1271972	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
29	1499264	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
31	1244919	T6	T8	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
33	1509845	T6	T6	T6	T6	T8	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
34	1501420	T6	T6	T6	T6	T8	T8	T10	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	II
35	1527543	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
36	1514949	T6	T8	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
37	1511717	T6	T6	T6	T8	T8	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
38	1536638	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
40	1310387	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
41	568591	-	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
42	217535	T6	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	iii	III	-	-	-	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-	-
44	1054451	T6	T6	T8	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
45	1509845	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
46	1509845	T6	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
48	1536141	T6	T6	T6	T8	T8	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
49	1635457	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
50	1527990	T6	T8	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-
51	24593	T6	T8	T8	T10	T10	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	II	II	-	-
52	1330193	-	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	iii	III	III	-	-	-	-	-	-	-
53	1656433	T6	T6	T8	T8	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	II	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
55	1605026	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
56	1338034	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
57	1711575	T6	T6	T6	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
58	1298962	T6	T6	T6	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
59	1341127	T6	T6	T6	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
60	1332427	T6	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
61	1638770	T6	T6	T6	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-
62	1643344	T6	T6	T6	T8	T8	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
63	1585818	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
64	1645267	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	0	0	II	II	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
66	1711994	-	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-	-
67	1691457	T6	T6	T6	T6	T8	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	III	III	III	III	-	-
68	1708318	T8	-	-	-	-	-	-	-	-	0	0	I	II	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
69	1701225	T6	-	-	-	-	-	-	-	-	0	0	III	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-
70	1712155	T6	-	-	-	-	-	-	-	-	0	0	II	III	III	III	III	III	III	III	III	III	III	-	-	-	-	-	-

				HEART RATE																									
S.NO.	MRD.NO.	165	180	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	5HR	6HR	7HR	8HR	9HR	10HR	11HR	12HR	13HR
1	1409602	-	-	80	86	84	82	80	78	78	76	82	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1404382	-	-	102	103	98	94	96	89	91	86	83	87	82	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1412184	-	-	78	72	75	76	72	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1450010	-	-	82	80	72	74	76	76	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1476734	-	-	72	76	72	70	76	77	80	82	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1408710	-	-	74	74	76	75	74	72	76	79	72	76	78	80	82	83	86	-	-	-	-	-	-	-	-	-	-	-
7	1483237	-	-	65	67	66	70	72	71	69	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1409616	-	-	69	70	72	74	68	72	70	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1485468	-	-	52	56	61	63	60	62	63	66	64	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	225855	II	-	70	90	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	-	-	76	72	70	73	78	80	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1481933	-	-	92	96	91	90	88	89	91	87	86	82	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	1490208	-	-	80	84	79	80	83	82	86	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	1440815	-	-	80	82	80	78	74	81	86	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1480845	-	-	86	82	84	89	91	86	98	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	1474400	-	-	90	86	82	80	78	76	79	82	85	86	90	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	1491020	-	-	78	72	75	76	72	78	81	83	90	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1490317	-	-	86	82	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	II	II	90	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	-	-	101	103	98	97	100	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1499251	-	-	82	86	88	90	94	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	1489985	-	-	91	93	94	96	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	1511114	-	-	80	81	80	84	90	92	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	1663151	-	-	82	84	86	90	94	96	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	1652585	-	-	78	82	84	87	86	90	92	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	1513256	-	-	76	78	80	82	84	80	82	80	86	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	15610521	-	-	70	68	76	74	79	82	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	1271972	-	-	82	86	88	85	87	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1499264	-	-	72	74	80	82	80	92	96	101	98	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	1519263	-	-	76	78	82	84	81	86	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	1244919	-	-	78	81	83	86	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1527233	-	-	72	79	82	86	86	90	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	1509845	-	-	87	92	98	102	105	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	1501420	-	-	89	92	102	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	-	-	76	72	74	72	76	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	1514949	-	-	106	100	104	102	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	-	-	98	96	96	98	103	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	1536638	-	-	87	83	84	86	92	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	1635457	-	-	65	64	68	70	71	68	72	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1310387	-	-	70	68	76	74	79	82	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	568591	-	-	82	84	85	89	88	91	95	93	98	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	217535	-	-	90	86	88	92	93	94	94	95	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	772670	-	-	76	72	76	81	86	81	82	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	1054451	-	-	72	76	81	84	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	-	-	88	90	87	86	87	90	96	92	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1509845	-	-	92	93	96	92	94	93	96	97	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	1338626	-	-	86	92	96	92	92	96	98	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	1536141	-	-	81	87	89	96	92	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	1635457	-	-	82	80	72	74	76	76	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	1527990	-	-	82	84	87	91	90	96	92	98	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	24593	-	-	93	98	96	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	-	-	72	74	78	76	78	80	82	86	90	92	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	1656433	-	-	78	76	82	84	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	-	-	64	67	72	76	84	96	101	100	104	103	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	1605026	-	-	86	82	88	81	89	93	96	99	102	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	1338034	-	-	73	76	79	81	83	82	86	90	97	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	1711575	-	-	81	85	87	92	99	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	1298962	-	-	82	86	90	92	97	99	103	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	1341127	-	-	98	96	99	102	103	107	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	1332427	-	-	79	80	83	87	89	93	92	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	1638770	-	-	73	76	82	89	93	90	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	1643344	-	-	96	92	98	99	101	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	1585818	-	-	73	68	67	66	68	68	70	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	1645267	-	-	78	74	76	70	72	78	80	82	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	1709081	-	-	72	74	70	73	78	82	81	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	1711994	-	-	78	72	76	78	82	84	81	83	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	1691457	-	-	76	72	76	80	82	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	1708318	-	-	84	81	88	87	91	98	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	1701225	-	-	90	86	82	78	76	78	86	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	1712155	-	-	86	82	81	80	82	86	90	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S.NO.	MRD.NO.	14HR	15HR	16HR	17HR	18HR	19HR	20HR	21HR	22HR	23HR	24HR	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240
1	1409602	-	-	-	-	-	-	-	-	-	-	-	130	134	130	128	120	116	114	110	116	118	-	-	-	-	-	-	-
2	1404382	-	-	-	-	-	-	-	-	-	-	-	135	133	140	136	134	137	142	138	136	132	139	136	-	-	-	-	-
3	1412184	-	-	-	-	-	-	-	-	-	-	-	118	116	110	116	108	116	-	-	-	-	-	-	-	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	-	-	110	112	115	120	119	126	130	-	-	-	-	-	-	-	-	-	-
5	1476734	-	-	-	-	-	-	-	-	-	-	-	116	118	114	120	121	123	126	130	126	-	-	-	-	-	-	-	-
6	1408710	-	-	-	-	-	-	-	-	-	-	-	140	142	139	136	134	138	130	126	128	132	132	136	138	132	134	-	-
7	1483237	-	-	-	-	-	-	-	-	-	-	-	122	120	118	119	120	124	132	122	-	-	-	-	-	-	-	-	-
8	1409616	-	-	-	-	-	-	-	-	-	-	-	114	118	116	119	121	124	124	125	-	-	-	-	-	-	-	-	-
9	1485468	-	-	-	-	-	-	-	-	-	-	-	112	116	119	121	123	119	117	118	123	120	-	-	-	-	-	-	-
10	225855	-	-	-	-	-	-	-	-	-	-	-	111	120	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	-	-	-	-	-	-	-	-	-	-	-	126	121	119	126	127	126	121	-	-	-	-	-	-	-	-	-	-
12	1481933	-	-	-	-	-	-	-	-	-	-	-	116	121	126	123	127	129	121	118	122	123	127	-	-	-	-	-	-
13	1490208	-	-	-	-	-	-	-	-	-	-	-	140	142	143	146	150	148	152	150	-	-	-	-	-	-	-	-	-
14	1440815	-	-	-	-	-	-	-	-	-	-	-	110	112	108	107	110	116	121	124	-	-	-	-	-	-	-	-	-
15	1480845	-	-	-	-	-	-	-	-	-	-	-	136	132	138	141	140	148	152	146	-	-	-	-	-	-	-	-	-
16	1474400	-	-	-	-	-	-	-	-	-	-	-	118	116	110	116	108	116	118	123	126	130	136	138	-	-	-	-	-
17	1491020	-	-	-	-	-	-	-	-	-	-	-	118	116	110	116	108	117	121	123	130	136	-	-	-	-	-	-	-
18	1490317	-	-	-	-	-	-	-	-	-	-	-	126	122	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	-	140	143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	-	-	-	-	-	-	-	-	-	-	-	128	130	134	138	140	140	-	-	-	-	-	-	-	-	-	-	-
21	1499251	-	-	-	-	-	-	-	-	-	-	-	122	127	123	130	136	140	-	-	-	-	-	-	-	-	-	-	-
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23	1511114	-	-	-	-	-	-	-	-	-	-	-	126	130	132	128	134	132	130	-	-	-	-	-	-	-	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	-	-	140	142	148	146	150	152	153	-	-	-	-	-	-	-	-	-	-
25	1652585	-	-	-	-	-	-	-	-	-	-	-	121	116	118	126	119	121	128	132	-	-	-	-	-	-	-	-	-
26	1513256	-	-	-	-	-	-	-	-	-	-	-	136	130	138	132	136	140	138	140	143	142	-	-	-	-	-	-	-
27	15610521	-	-	-	-	-	-	-	-	-	-	-	119	123	126	124	120	128	136	-	-	-	-	-	-	-	-	-	-
28	1271972	-	-	-	-	-	-	-	-	-	-	-	120	136	133	135	134	132	-	-	-	-	-	-	-	-	-	-	-
29	1499264	-	-	-	-	-	-	-	-	-	-	-	132	136	128	121	129	128	132	138	140	148	-	-	-	-	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	-	-	126	128	131	124	122	129	130	-	-	-	-	-	-	-	-	-	-
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32	1527233	-	-	-	-	-	-	-	-	-	-	-	132	133	134	136	132	136	138	-	-	-	-	-	-	-	-	-	-
33	1509845	-	-	-	-	-	-	-	-	-	-	-	136	138	130	132	136	142	-	-	-	-	-	-	-	-	-	-	-
34	1501420	-	-	-	-	-	-	-	-	-	-	-	128	136	138	140	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	-	-	-	-	-	-	-	-	-	-	-	128	130	132	136	130	132	-	-	-	-	-	-	-	-	-	-	-
36	1514949	-	-	-	-	-	-	-	-	-	-	-	121	123	118	122	126	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	-	-	-	-	-	-	-	-	-	-	-	140	143	138	139	143	144	-	-	-	-	-	-	-	-	-	-	-
38	1536638	-	-	-	-	-	-	-	-	-	-	-	130	126	128	124	124	126	-	-	-	-	-	-	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	-	-	116	108	110	112	118	122	128	126	-	-	-	-	-	-	-	-	-
40	1310387	-	-	-	-	-	-	-	-	-	-	-	119	123	126	124	120	128	136	-	-	-	-	-	-	-	-	-	-
41	568591	-	-	-	-	-	-	-	-	-	-	-	119	122	126	121	119	120	118	128	127	130	-	-	-	-	-	-	-
42	217535	-	-	-	-	-	-	-	-	-	-	-	121	123	124	126	122	130	132	128	136	-	-	-	-	-	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	-	-	120	116	122	123	124	119	120	123	-	-	-	-	-	-	-	-	-
44	1054451	-	-	-	-	-	-	-	-	-	-	-	123	126	121	123	126	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	-	-	-	-	-	-	-	-	-	-	-	130	132	131	128	126	130	132	136	132	-	-	-	-	-	-	-	-
46	1509845	-	-	-	-	-	-	-	-	-	-	-	135	137	132	130	128	132	136	132	136	-	-	-	-	-	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	-	-	128	124	120	128	130	136	140	146	-	-	-	-	-	-	-	-	-
48	1536141	-	-	-	-	-	-	-	-	-	-	-	125	127	130	134	135	137	-	-	-	-	-	-	-	-	-	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	-	110	112	115	120	119	126	130	-	-	-	-	-	-	-	-	-	-
50	1527990	-	-	-	-	-	-	-	-	-	-	-	118	121	122	128	132	138	136	142	140	-	-	-	-	-	-	-	-
51	24593	-	-	-	-	-	-	-	-	-	-	-	140	136	143	146	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	-	-	-	-	-	-	-	-	-	-	-	124	128	132	134	138	140	136	132	136	138	142	-	-	-	-	-	-
53	1656433	-	-	-	-	-	-	-	-	-	-	-	130	134	131	138	140	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	-	-	147	140	136	142	146	140	138	144	147	142	143	-	-	-	-	-	-
55	1605026	-	-	-	-	-	-	-	-	-	-	-	126	130	132	136	131	138	142	144	145	146	-	-	-	-	-	-	-
56	1338034	-	-	-	-	-	-	-	-	-	-	-	135	131	128	134	137	140	142	138	140	139	-	-	-	-	-	-	-
57	1711575	-	-	-	-	-	-	-	-	-	-	-	132	136	131	138	142	143	-	-	-	-	-	-	-	-	-	-	-
58	1298962	-	-	-	-	-	-	-	-	-	-	-	130	132	136	140	142	138	140	142	-	-	-	-	-	-	-	-	-
59	1341127	-	-	-	-	-	-	-	-	-	-	-	127	130	132	136	138	140	141	-	-	-	-	-	-	-	-	-	-
60	1332427	-	-	-	-	-	-	-	-	-	-	-	127	130	131	133	135	139	140	142	-	-	-	-	-	-	-	-	-
61	1638770	-	-	-	-	-	-	-	-	-	-	-	130	136	140	143	138	142	140	-	-	-	-	-	-	-	-	-	-
62	1643344	-	-	-	-	-	-	-	-	-	-	-	124	128	132	135	140	143	-	-	-	-	-	-	-	-	-	-	-
63	1585818	-	-	-	-	-	-	-	-	-	-	-	124	120	123	128	131	129	130	128	-	-	-	-	-	-	-	-	-
64	1645267	-	-	-	-	-	-	-	-	-	-	-	119	121	120	118	122	128	130	133	132	-	-	-	-	-	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	-	-	128	126	121	132	136	134	138	142	-	-	-	-	-	-	-	-	-
66	1711994	-	-	-	-	-	-	-	-	-	-	-	109	103	106	112	113	110	108	114	110	-	-	-	-	-	-	-	-
67	1691457	-	-	-	-	-	-	-	-	-	-	-	124	120	126	128	131	133	-	-	-	-	-	-	-	-	-	-	-
68	1708318	-	-	-	-	-	-	-	-	-	-	-	126	128	124	129	130	133	132	-	-	-	-	-	-	-	-	-	-
69	1701225	-	-	-	-	-	-	-	-	-	-	-	106	110	112	107	113	110	116	121	-	-	-	-	-	-	-	-	-
70	1712155	-	-	-	-	-	-	-	-	-	-	-	124	122	120	123	123	124	128	130	-	-	-	-	-	-	-	-	-

		SBP(mmHg)																											
S.NO.	MRD.NO.	5HR	6HR	7HR	8HR	9HR	10HR	11HR	12HR	13HR	14HR	15HR	16HR	17HR	18HR	19HR	20HR	21HR	22HR	23HR	24HR	0	15	30	45	60	75	90	105
1	1409602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86	80	82	79	76	72	70	78
2	1404382	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79	76	82	84	79	81	89	84
3	1412184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	78	72	76	72	-	-
4	1450010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	83	88	82	83	89	86	-
5	1476734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	69	62	70	73	70	69	72
6	1408710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	86	80	78	74	72	69	70
7	1483237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	70	71	71	81	86	73	75
8	1409616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	76	80	81	82	84	79	78
9	1485468	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	58	61	63	60	62	64	62
10	225855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64	76	80	-	-	-	-	-
11	1490563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	79	70	76	70	72	70	-
12	1481933	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	87	80	81	79	72	70	72
13	1490208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	82	79	78	80	82	86	72
14	1440815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	62	69	62	70	74	81	84
15	1480845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	79	72	76	82	86	91	82
16	1474400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	72	78	72	76	72	73	86
17	1491020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	78	72	76	72	78	72
18	1490317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	80	87	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92	90	-	-	-	-	-	-
20	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	79	80	79	80	79	-	-
21	1499251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	69	72	72	79	82	-	-
22	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	68	70	76	80	-	-	-
23	1511114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	90	92	94	86	80	86	-
24	1663151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	80	87	82	78	76	-
25	1652585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	70	72	80	74	70	72	86
26	1513256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	70	76	70	74	76	72	79
27	15610521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	71	76	72	70	76	78	-
28	1271972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	83	89	90	86	91	-	-
29	1499264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	70	76	70	72	74	76	80
30	1519263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	82	80	86	79	81	78	-
31	1244919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	70	72	70	81	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86	82	87	82	80	86	89	-
33	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	82	81	79	82	90	-	-
34	1501420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79	82	87	92	-	-	-	-
35	1527543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	71	74	72	71	78	-	-
36	1514949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	72	74	72	73	-	-	-
37	1511717	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	83	81	79	82	78	82	-	-
38	1536638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	81	83	81	81	80	-	-
39	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	62	60	64	62	70	76	72
40	1310387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	71	76	72	70	76	78	-
41	568591	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	62	67	62	66	65	64	63
42	217535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	72	72	74	78	71	73	74
43	772670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	70	69	68	72	74	73
44	1054451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	70	71	72	70	-	-	-
45	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	72	69	70	70	71	68	67
46	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	81	80	76	82	81	86	84
47	1338626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	71	80	82	81	92	98
48	1536141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	79	78	79	84	83	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	83	88	82	83	89	86	-
50	1527990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	76	74	72	78	87	86
51	24593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	86	90	92	-	-	-	-
52	1330193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	68	70	74	73	70	71	76
53	1656433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86	82	84	83	92	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	92	87	86	80	82	84	87
55	1605026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	70	72	70	71	76	74	78
56	1338034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	71	70	76	69	72	73	76
57	1711575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	71	78	84	81	86	-	-
58	1298962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	76	72	77	78	81	78	82
59	1341127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	72	77	78	82	89	87	-
60	1332427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	66	70	72	69	71	73	78
61	1638770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	76	70	78	72	76	83	-
62	1643344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	72	70	73	83	91	-	-
63	1585818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	66	63	62	69	71	68	72
64	1645267	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	73	74	76	72	70	71	73
65	1709081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	73	74	72	76	78	74	78
66	1711994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	71	72	73	76	72	71	75
67	1691457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	69	72	73	75	76	-	-
68	1708318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	73	71	73	74	76	78	-
69	1701225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	66	69	71	73	70	74	76
70	1712155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	76	70	72	70	73	76	72

		DBP (mmHg)																												
S.NO.	MRD.NO.	120	135	150	165	180	195	210	225	240	5hr	6hr	7hr	8hr	9hr	10hr	11hr	12HR	13HR	14HR	15HR	16HR	17HR	18HR	19HR	20HR	21HR	22HR	23HR
1	1409602	76	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1404382	78	76	74	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1412184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1476734	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1408710	68	66	65	68	70	72	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	1483237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1409616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1485468	69	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	225855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1481933	76	74	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	1490208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	1440815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1480845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	1474400	87	90	92	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	1491020	79	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1490317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1499251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	1511114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	1652585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	1513256	87	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	15610521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	1271972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1499264	96	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	1244919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	1501420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	1514949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	1536638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1310387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	568591	66	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	217535	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	1054451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1509845	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	1536141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	1527990	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	24593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	73	72	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	1656433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	89	91	93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	1605026	80	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	1338034	79	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	1711575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	1298962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	1341127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	1332427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	1638770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	1643344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	1585818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	1645267	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	1711994	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	1691457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	1708318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	1701225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	1712155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			MAP (mmHg)																										
S.NO.	MRD.NO.	24HR	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	5hr	6hr	7hr	8hr	9hr	10hr	11hr	12hr	13hr	14hr
1	1409602	-	101	98	98	95	91	87	85	89	89	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1404382	-	100	95	102	101	97	100	107	102	97	95	96	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1412184	-	90	87	89	87	87	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1450010	-	92	98	98	96	99	106	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1476734	-	85	85	79	87	89	88	88	91	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1408710	-	101	105	100	97	94	92	89	89	88	88	87	91	93	92	94	-	-	-	-	-	-	-	-	-	-	-	-
7	1483237	-	88	89	87	87	94	107	102	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1409616	-	88	90	92	94	95	97	94	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1485468	-	77	77	80	82	81	81	82	81	87	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	225855	-	91	91	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	-	95	93	86	93	89	90	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1481933	-	85	98	95	95	95	91	87	87	91	90	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	1490208	-	100	102	100	101	103	104	108	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	1440815	-	82	79	82	77	83	88	94	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1480845	-	99	97	94	98	101	107	111	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	1474400	-	89	87	89	87	87	87	89	98	100	103	107	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	1491020	-	90	87	89	87	87	87	92	89	96	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1490317	-	97	94	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	-	108	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	-	101	96	98	99	100	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1499251	-	87	88	89	91	98	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	1489985	-	83	83	88	93	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	1511114	-	97	103	105	105	102	97	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	1663151	-	97	95	103	107	105	103	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	1652585	-	91	85	87	95	89	84	91	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	1513256	-	93	90	97	91	95	97	94	99	106	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	15610521	-	88	88	93	89	87	93	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	1271972	-	95	101	104	105	102	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1499264	-	92	92	93	87	91	92	95	99	111	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	1519263	-	100	97	97	99	93	97	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	1244919	-	90	87	89	87	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1527233	-	101	99	103	100	97	103	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	1509845	-	103	101	97	97	100	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	1501420	-	95	100	104	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	-	91	91	93	93	91	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	1514949	-	87	89	89	89	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	-	102	102	99	101	100	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	1536638	-	98	96	97	97	97	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	1635457	-	86	77	77	80	80	87	93	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1310387	-	88	88	93	89	87	93	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	568591	-	85	82	87	82	84	83	82	85	86	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	217535	-	87	89	89	91	90	91	93	92	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	772670	-	91	87	87	87	87	88	89	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	1054451	-	92	89	88	89	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	-	90	92	90	89	89	91	89	90	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1509845	-	100	100	97	94	97	98	103	100	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	1338626	-	93	89	87	96	98	99	108	114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	1536141	-	96	95	95	97	101	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	1635457	-	92	98	98	96	99	106	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	1527990	-	90	88	91	92	92	98	103	105	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	24593	-	107	103	108	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	-	86	88	91	94	95	93	93	95	94	94	113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	1656433	-	101	99	100	101	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	-	108	108	103	105	102	101	102	106	108	108	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	1605026	-	94	90	92	92	91	97	97	100	102	106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	1338034	-	97	91	89	95	92	95	96	97	99	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	1711575	-	92	93	96	102	101	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	1298962	-	95	95	93	98	99	100	99	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	1341127	-	93	91	95	97	101	106	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	1332427	-	87	87	90	92	91	94	95	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	1638770	-	91	96	93	100	94	98	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	1643344	-	93	91	91	94	102	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	1585818	-	87	84	83	84	90	90	89	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	1645267	-	86	89	89	90	89	89	91	93	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	1709081	-	89	91	90	92	96	97	95	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	1711994	-	82	82	83	86	88	85	83	88	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	1691457	-	88	86	90	91	94	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	1708318	-	90	91	89	92	93	95	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	1701225	-	81	81	83	83	86	83	88	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	1712155	-	93	91	87	90	88	90	93	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

																														SPO2
S.NO.	MRD.NO.	15hr	16hr	17hr	18hr	19hr	20hr	21hr	22hr	23hr	24hr	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	5hr
1	1409602	-	-	-	-	-	-	-	-	-	-	99	99	100	99	99	98	98	97	98	98	-	-	-	-	-	-	-	-
2	1404382	-	-	-	-	-	-	-	-	-	-	99	98	99	98	99	98	98	98	99	99	99	98	-	-	-	-	-	-
3	1412184	-	-	-	-	-	-	-	-	-	-	97	97	98	98	97	98	-	-	-	-	-	-	-	-	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	-	97	97	98	97	98	98	97	-	-	-	-	-	-	-	-	-	-	-
5	1476734	-	-	-	-	-	-	-	-	-	-	99	98	98	98	98	99	99	98	98	-	-	-	-	-	-	-	-	-
6	1408710	-	-	-	-	-	-	-	-	-	-	98	98	97	98	99	98	99	98	97	97	98	98	99	99	98	-	-	-
7	1483237	-	-	-	-	-	-	-	-	-	-	98	98	97	97	98	97	99	98	-	-	-	-	-	-	-	-	-	-
8	1409616	-	-	-	-	-	-	-	-	-	-	99	98	99	99	98	98	97	98	-	-	-	-	-	-	-	-	-	-
9	1485468	-	-	-	-	-	-	-	-	-	-	100	99	99	99	98	99	98	99	99	99	-	-	-	-	-	-	-	-
10	225855	-	-	-	-	-	-	-	-	-	-	97	97	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	-	-	-	-	-	-	-	-	-	-	98	98	97	97	98	98	98	-	-	-	-	-	-	-	-	-	-	-
12	1481933	-	-	-	-	-	-	-	-	-	-	100	99	99	98	98	99	99	98	98	98	99	-	-	-	-	-	-	-
13	1490208	-	-	-	-	-	-	-	-	-	-	99	98	98	97	98	98	99	98	-	-	-	-	-	-	-	-	-	-
14	1440815	-	-	-	-	-	-	-	-	-	-	98	98	97	98	98	97	98	98	-	-	-	-	-	-	-	-	-	-
15	1480845	-	-	-	-	-	-	-	-	-	-	98	97	98	98	97	97	98	98	-	-	-	-	-	-	-	-	-	-
16	1474400	-	-	-	-	-	-	-	-	-	-	100	100	99	99	99	98	-	98	99	99	98	99	-	-	-	-	-	-
17	1491020	-	-	-	-	-	-	-	-	-	-	98	97	98	97	98	98	99	98	97	97	-	-	-	-	-	-	-	-
18	1490317	-	-	-	-	-	-	-	-	-	-	100	99	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	98	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	-	-	-	-	-	-	-	-	-	-	97	98	97	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-
21	1499251	-	-	-	-	-	-	-	-	-	-	98	98	99	98	97	98	-	-	-	-	-	-	-	-	-	-	-	-
22	1489985	-	-	-	-	-	-	-	-	-	-	99	98	98	98	99	-	-	-	-	-	-	-	-	-	-	-	-	-
23	1511114	-	-	-	-	-	-	-	-	-	-	97	98	98	97	97	98	98	-	-	-	-	-	-	-	-	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	-	99	99	99	98	98	99	99	-	-	-	-	-	-	-	-	-	-	-
25	1652585	-	-	-	-	-	-	-	-	-	-	98	98	98	99	97	98	98	99	-	-	-	-	-	-	-	-	-	-
26	1513256	-	-	-	-	-	-	-	-	-	-	98	98	98	98	97	98	97	99	98	97	-	-	-	-	-	-	-	-
27	15610521	-	-	-	-	-	-	-	-	-	-	98	98	98	99	98	98	99	-	-	-	-	-	-	-	-	-	-	-
28	1271972	-	-	-	-	-	-	-	-	-	-	98	99	98	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-
29	1499264	-	-	-	-	-	-	-	-	-	-	99	98	98	98	99	99	98	98	98	98	-	-	-	-	-	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	-	99	98	98	99	98	98	98	-	-	-	-	-	-	-	-	-	-	-
31	1244919	-	-	-	-	-	-	-	-	-	-	98	97	98	98	97	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	-	98	98	99	97	97	98	97	-	-	-	-	-	-	-	-	-	-	-
33	1509845	-	-	-	-	-	-	-	-	-	-	98	98	97	97	97	98	-	-	-	-	-	-	-	-	-	-	-	-
34	1501420	-	-	-	-	-	-	-	-	-	-	98	98	97	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	-	-	-	-	-	-	-	-	-	-	98	97	97	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-
36	1514949	-	-	-	-	-	-	-	-	-	-	98	97	98	98	97	-	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	-	-	-	-	-	-	-	-	-	-	98	98	97	98	98	97	-	-	-	-	-	-	-	-	-	-	-	-
38	1536638	-	-	-	-	-	-	-	-	-	-	99	98	99	99	98	98	-	-	-	-	-	-	-	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	-	98	98	98	99	99	98	98	99	-	-	-	-	-	-	-	-	-	-
40	1310387	-	-	-	-	-	-	-	-	-	-	98	98	98	99	98	98	99	-	-	-	-	-	-	-	-	-	-	-
41	568591	-	-	-	-	-	-	-	-	-	-	98	99	98	98	98	99	99	98	98	99	-	-	-	-	-	-	-	-
42	217535	-	-	-	-	-	-	-	-	-	-	98	99	99	99	99	98	98	98	99	-	-	-	-	-	-	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	-	98	99	99	98	99	98	98	99	-	-	-	-	-	-	-	-	-	-
44	1054451	-	-	-	-	-	-	-	-	-	-	98	99	98	98	97	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	-	-	-	-	-	-	-	-	-	-	98	98	97	97	98	97	98	97	99	-	-	-	-	-	-	-	-	-
46	1509845	-	-	-	-	-	-	-	-	-	-	98	99	99	98	98	99	98	98	99	-	-	-	-	-	-	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	-	99	98	99	99	98	98	98	99	-	-	-	-	-	-	-	-	-	-
48	1536141	-	-	-	-	-	-	-	-	-	-	98	99	99	98	99	99	-	-	-	-	-	-	-	-	-	-	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	97	98	98	97	98	98	99	-	-	-	-	-	-	-	-	-	-	-
50	1527990	-	-	-	-	-	-	-	-	-	-	97	98	98	98	99	99	98	98	98	-	-	-	-	-	-	-	-	-
51	24593	-	-	-	-	-	-	-	-	-	-	98	97	97	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	-	-	-	-	-	-	-	-	-	-	98	99	98	97	98	98	98	97	97	98	98	-	-	-	-	-	-	-
53	1656433	-	-	-	-	-	-	-	-	-	-	98	97	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	-	98	99	98	98	97	97	98	98	98	97	98	-	-	-	-	-	-	-
55	1605026	-	-	-	-	-	-	-	-	-	-	98	98	97	97	98	98	98	97	97	98	-	-	-	-	-	-	-	-
56	1338034	-	-	-	-	-	-	-	-	-	-	98	99	99	98	98	99	98	98	98	99	-	-	-	-	-	-	-	-
57	1711575	-	-	-	-	-	-	-	-	-	-	97	97	98	98	97	98	-	-	-	-	-	-	-	-	-	-	-	-
58	1298962	-	-	-	-	-	-	-	-	-	-	98	98	97	98	98	97	98	98	-	-	-	-	-	-	-	-	-	-
59	1341127	-	-	-	-	-	-	-	-	-	-	98	98	97	98	98	97	99	-	-	-	-	-	-	-	-	-	-	-
60	1332427	-	-	-	-	-	-	-	-	-	-	98	98	99	98	97	98	99	98	-	-	-	-	-	-	-	-	-	-
61	1638770	-	-	-	-	-	-	-	-	-	-	97	97	98	98	98	97	97	-	-	-	-	-	-	-	-	-	-	-
62	1643344	-	-	-	-	-	-	-	-	-	-	98	99	99	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-
63	1585818	-	-	-	-	-	-	-	-	-	-	97	96	96	97	97	98	97	98	-	-	-	-	-	-	-	-	-	-
64	1645267	-	-	-	-	-	-	-	-	-	-	97	97	98	98	97	98	98	97	98	-	-	-	-	-	-	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	-	97	97	98	98	97	98	97	98	-	-	-	-	-	-	-	-	-	-
66	1711994	-	-	-	-	-	-	-	-	-	-	97	98	98	98	97	97	98	98	97	-	-	-	-	-	-	-	-	-
67	1691457	-	-	-	-	-	-	-	-	-	-	98	97	97	98	98	97	-	-	-	-	-	-	-	-	-	-	-	-
68	1708318	-	-	-	-	-	-	-	-	-	-	97	98	97	98	98	98	98	-	-	-	-	-	-	-	-	-	-	-
69	1701225	-	-	-	-	-	-	-	-	-	-	98	98	98	97	97	98	98	97	-	-	-	-	-	-	-	-	-	-
70	1712155	-	-	-	-	-	-	-	-	-	-	98	98	97	98	98	97	98	97	-	-	-	-	-	-	-	-	-	-

		POSTOPERATIVE MONITORING (IN MINUTES)																												
		%)																												
S.NO.	MRD.NO.	6hr	7hr	8hr	9hr	10hr	11hr	12hr	13hr	14hr	15hr	16hr	17hr	18hr	19hr	20hr	21hr	22hr	23hr	24hr	0	15	30	45	60	75	90	105	120	135
1	1409602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T4	T6	T6	T8	T8	T10	T10	T12	T12	L1
2	1404382	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T6	T8	T8	T10	T10	T12	T12	L1
3	1412184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
4	1450010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T4	T8	T8	T10	T12	L1	-	-	-
5	1476734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T8	T8	T10	T12	T12	L1	-	-
6	1408710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T6	T8	T8	T10	T10	T10	T12	T12
7	1483237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
8	1409616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T12	L1	-	-	-	-
9	1485468	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
10	225855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L1	-	-	-	-	-	-	-	-	-
11	1490563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	T12	L1	-	-	-	-
12	1481933	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T6	T6	T8	T8	T10	T12	T12	L1
13	1490208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T4	T4	T6	T6	T8	T8	T10	T12	L1	-
14	1440815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
15	1480845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T12	T12	L1	-	-	-	-
16	1474400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	L1	-	-
17	1491020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T12	L1	-	-	-	-	-
18	1490317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T12	L1	-	-	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L1	L1	-	-	-	-	-	-	-	-
20	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T12	L1	-	-	-	-	-	-
21	1499251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T12	L1	-	-	-	-	-	-	-
22	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T10	T12	L1	-	-	-	-	-	-
23	1511114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T10	T12	L1	-	-	-
24	1663151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T10	T12	L1	-	-	-
25	1652585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	L1	L2	-	-
26	1513256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	L1	-	-
27	15610521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
28	1271972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
29	1499264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T10	T12	L1	-	-	-
30	1519263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
31	1244919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
32	1527233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
33	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
34	1501420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T12	L1	-	-	-	-	-	-	-	-
35	1527543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
36	1514949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
37	1511717	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T10	T12	T12	L1	-	-	-	-	-
38	1536638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T12	L1	-	-	-	-	-
39	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T6	T8	T8	T10	T12	L1	-	-
40	1310387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
41	568591	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T8	T8	T8	T10	T10	T12	L1	-
42	217535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T10	T12	L1	-	-	-
43	772670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
44	1054451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T12	L1	-	-	-	-	-	-
45	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
46	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
47	1338626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T12	L1	-	-	-	-
48	1536141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T10	T12	L1	-	-	-	-	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	-	-	-
50	1527990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
51	24593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T12	T12	L1	-	-	-	-	-	-	-
52	1330193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T8	T8	T8	T10	T10	T12	L1	-
53	1656433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T10	T12	L1	-	-	-	-	-	-
54	1342251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T6	T8	T8	T8	T10	T10	T12	L1	-
55	1605026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	L1	-	-
56	1338034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	L1	-	-
57	1711575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
58	1298962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
59	1341127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T12	L1	-	-	-	-	-
60	1332427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T12	L1	-	-	-	-
61	1638770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-
62	1643344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T10	T10	T12	L1	-	-	-	-	-	-
63	1585818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T12	L1	-	-	-	-
64	1645267	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T10	T12	L1	-	-	-
65	1709081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T8	T10	T10	T12	L1	-	-	-
66	1711994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T8	T10	T10	T12	L1	-	-
67	1691457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T12	L1	-	-	-	-	-
68	1708318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T10	T10	T12	L1	-	-	-	-	-
69	1701225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T6	T8	T8	T10	T10	T12	L1	-	-	-
70	1712155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T8	T8	T10	T10	T12	L1	-	-	-	-

		LEVEL OF SENSORY BLOCKADE																													
S.NO.	MRD.NO.	150	165	180	195	210	225	240	5hr	6hr	7hr	8hr	9hr	10hr	11hr	12hr	13hr	14hr	15hr	16hr	17hr	18hr	19hr	20hr	21hr	22hr	23hr	24hr	0	15
1	1409602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	iii	iii
2	1404382	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	iii	iii
3	1412184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
4	1450010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
5	1476734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	iii	III
6	1408710	L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
7	1483237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
8	1409616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
9	1485468	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
10	225855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	iii	I
11	1490563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
12	1481933	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
13	1490208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
14	1440815	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
15	1480845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
16	1474400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
17	1491020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
18	1490317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	I
19	1491710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	0
20	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
21	1499251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
22	1489985	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
23	1511114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
24	1663151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
25	1652585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
26	1513256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
27	15610521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
28	1271972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
29	1499264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
30	1519263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
31	1244919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
32	1527233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
33	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
34	1501420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
35	1527543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
36	1514949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
37	1511717	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
38	1536638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
39	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
40	1310387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
41	568591	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
42	217535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
43	772670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
44	1054451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
45	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
46	1509845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
47	1338626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
48	1536141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
49	1635457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
50	1527990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
51	24593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	I
52	1330193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
53	1656433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	I
54	1342251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
55	1605026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
56	1338034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
57	1711575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
58	1298962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
59	1341127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
60	1332427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
61	1638770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	II
62	1643344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
63	1585818	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
64	1645267	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
65	1709081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
66	1711994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
67	1691457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	II	II
68	1708318	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
69	1701225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III
70	1712155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	III	III

		MODIFIED BROMAGE SCORE																													
S.NO.	MRD.NO.	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	5hr	6hr	7hr	8hr	9hr	10hr	11hr	12hr	13hr	14hr	15hr	16hr	17hr	18hr	19hr
1	1409602	ii	ii	i	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1404382	iii	iii	ii	ii	ii	i	i	i	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1412184	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1450010	III	III	II	II	ii	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1476734	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1408710	III	III	III	III	III	III	III	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	1483237	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1409616	III	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1485468	III	III	III	III	II	III	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	225855	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1490563	II	I	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1481933	III	III	III	III	III	II	III	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	1490208	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	1440815	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1480845	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	1474400	III	III	III	III	III	II	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	1491020	III	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1490317	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	1491710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1489985	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1499251	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	1489985	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	1511114	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	1663151	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	1652585	III	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	1513256	III	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	15610521	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	1271972	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1499264	III	III	II	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	1519263	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	1244919	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1527233	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	1509845	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	1501420	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	1527543	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	1514949	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	1511717	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	1536638	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	1635457	III	III	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	1310387	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	568591	III	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	217535	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	772670	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	1054451	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1509845	II	II	II	I	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1509845	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	1338626	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	1536141	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	1635457	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	1527990	II	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	24593	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	1330193	III	III	III	III	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	1656433	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	1342251	III	III	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	1605026	III	III	III	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	1338034	III	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	1711575	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	1298962	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	1341127	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	1332427	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	1638770	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	1643344	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	1585818	III	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	1645267	III	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	1709081	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	1711994	III	III	II	II	II	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	1691457	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	1708318	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	1701225	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	1712155	II	II	II	I	I	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

							VAS																							
S.NO.	MRD.NO.	20hr	21hr	22hr	23hr	24hr	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	5hr	6hr	7hr	8hr	9hr	10hr	11hr
1	1409602	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	4	3	4	4	2	2	2
2	1404382	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	2	2	4	4	2	2	2	2	4	2	2	2	2
3	1412184	-	-	-	-	-	0	0	0	0	0	0	2	2	2	4	4	4	4	2	2	2	2	4	2	2	2	4	2	2
4	1450010	-	-	-	-	-	0	0	0	0	2	2	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	1476734	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	0	0	2	2	2	2	2	4
6	1408710	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	4	4	6
7	1483237	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	4	4	2	2	2	2	2	2	4	4	2	2	2	0
8	1409616	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	4	4	2	2	2	2	4
9	1485468	-	-	-	-	-	0	0	0	0	0	0	0	2	2	4	4	2	2	2	2	4	4	2	2	2	2	4	4	2
10	225855	-	-	-	-	-	2	4	4	2	2	2	2	2	2	6	4	2	2	2	2	2	2	4	4	2	2	2	2	2
11	1490563	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	0	0	0	2	2	4	4
12	1481933	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2
13	1490208	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	2	2	2	2	4	4	2	2	2	2	2	4	4	2
14	1440815	-	-	-	-	-	0	0	0	0	0	2	4	4	2	2	0	0	0	2	4	4	2	2	2	2	0	0	2	2
15	1480845	-	-	-	-	-	0	0	0	0	0	0	4	4	2	2	2	2	4	4	2	2	2	2	4	4	2	2	2	2
16	1474400	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	2	2	4	6	4	2	2	2	2	0	2	2	4
17	1491020	-	-	-	-	-	0	0	0	0	0	0	0	2	4	6	4	4	2	2	0	0	2	2	4	4	2	2	2	2
18	1490317	-	-	-	-	-	0	0	0	0	2	2	2	2	2	2	4	4	2	2	2	2	2	2	2	4	4	2	2	2
19	1491710	-	-	-	-	-	2	4	4	2	2	2	2	4	2	2	2	2	2	2	2	4	4	2	2	2	2	4	6	4
20	1489985	-	-	-	-	-	0	0	0	2	2	2	4	6	4	2	2	2	2	4	4	4	2	2	2	2	2	2	2	4
21	1499251	-	-	-	-	-	0	0	2	2	2	4	4	2	2	2	3	3	4	6	4	2	2	2	3	3	4	4	2	2
22	1489985	-	-	-	-	-	0	0	0	0	0	0	2	2	4	4	2	2	2	2	2	2	4	4	2	2	2	2	2	4
23	1511114	-	-	-	-	-	0	0	0	0	0	0	2	2	4	4	2	2	2	2	2	2	4	4	2	2	2	2	2	2
24	1663151	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	4	4	2	2	2	2	2
25	1652585	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	4	4
26	1513256	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	2	2	4	4	2	2	2	2	2	2	4	4	2
27	15610521	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	4	4	2	2	2
28	1271972	-	-	-	-	-	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	4	4	2	2	2	2	2	2	2
29	1499264	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	4	6	4	2	2	2	3	4	4	2	2	2	4	4
30	1519263	-	-	-	-	-	0	0	0	0	0	0	2	2	2	4	4	2	2	2	3	4	6	4	2	2	2	2	3	4
31	1244919	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	4	4	2	2
32	1527233	-	-	-	-	-	0	0	0	0	2	2	2	2	4	4	4	2	2	2	2	2	2	4	4	2	2	2	2	2
33	1509845	-	-	-	-	-	0	0	0	2	2	2	4	6	4	2	2	2	2	4	6	4	2	2	2	2	2	4	4	2
34	1501420	-	-	-	-	-	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	2	2	4	4	2	2	2	2	2
35	1527543	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	2	2	2	4	4	2	2	2	2	2	2	2	2
36	1514949	-	-	-	-	-	0	0	0	0	0	0	2	2	4	4	4	2	2	2	2	2	2	4	4	2	2	2	2	2
37	1511717	-	-	-	-	-	0	0	0	0	0	2	2	2	2	2	2	2	4	4	2	2	2	2	2	2	2	2	4	4
38	1536638	-	-	-	-	-	0	0	0	0	2	2	2	2	4	6	4	2	2	2	2	2	4	4	2	2	2	2	2	2
39	1635457	-	-	-	-	-	0	0	0	0	0	0	2	2	2	2	2	2	2	4	4	4	2	2	2	2	2	2	2	4
40	1310387	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	4	4	2	2	2
41	568591	-	-	-	-	-	0	0	0	0	2	2	2	2	2	2	3	3	4	4	4	2	2	2	2	2	4	4	2	2
42	217535	-	-	-	-	-	0	0	0	0	0	2	2	2	2	2	4	4	2	2	2	2	2	2	4	4	2	2	2	2
43	772670	-	-	-	-	-	0	0	0	0	0	2	2	2	2	2	2	2	4	4	2	2	2	2	2	2	2	2	2	2
44	1054451	-	-	-	-	-	0	0	0	2	2	2	4	6	4	2	2	2	2	2	2	4	4	2	2	2	2	2	2	4
45	1509845	-	-	-	-	-	0	0	0	0	0	0	2	2	2	2	4	4	2	2	2	2	2	2	4	4	2	2	2	2
46	1509845	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	6	4	2	2	2	2	2	4	4	2	2	2	2
47	1338626	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	6	4	2	2	2	2	2	4	4	2	2	2	2
48	1536141	-	-	-	-	-	0	0	0	0	0	0	2	2	2	2	4	4	4	2	2	2	2	2	2	4	4	4	2	2
49	1635457	-	-	-	-	-	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	2	2	4	4	2	2
50	1527990	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	2	2	4	4	2	2	2	2	2	2	4	4	2	2
51	24593	-	-	-	-	-	0	0	0	2	2	4	6	4	2	2	2	2	2	4	4	4	2	2	2	2	2	2	2	4
52	1330193	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	2	2	2	2	4	4	2	2	2	2	2	2	2	2
53	1656433	-	-	-	-	-	0	0	0	2	2	2	4	6	4	2	2	2	2	2	2	4	4	4	2	2	2	2	2	2
54	1342251	-	-	-	-	-	0	0	0	0	0	0	0	0	2	4	6	4	2	2	2	2	2	4	4	4	2	2	2	2
55	1605026	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	3	3	4	4	2	2	2
56	1338034	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	2	2	4	4
57	1711575	-	-	-	-	-	0	0	0	0	2	2	2	4	6	4	2	2	2	3	4	4	2	2	2	2	2	3	4	4
58	1298962	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	4	4	2	2	2
59	1341127	-	-	-	-	-	0	0	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	4	4	2	2	2
60	1332427	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	2	2	4	4	2	2
61	1638770	-	-	-	-	-	0	0	0	0	0	0	2	2	4	6	4	2	2	2	2	2	2	3	4	4	2	2	2	2
62	1643344	-	-	-	-	-	0	0	0	0	2	2	3	4	6	4	2	2	2	2	2	2	3	4	4	4	2	2	2	2
63	1585818	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	2	4	4	2	2	2	2	2	2	2	2	2	2
64	1645267	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2	3	4	4	4	2	2	2	2	2	2	4	4	2
65	1709081	-	-	-	-	-	0	0	0	0	0	0	0	2	2	3	4	4	2	2	2	2	2	2	4	4	2	2	2	2
66	1711994	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	2	2	2	3	4	4	2	2	2	2	2	2	2	2
67	1691457	-	-	-	-	-	0	0	0	0	0	0	2	2	2	4	4	4	2	2	2	2	2	2	2	3	4	4	2	2
68	1708318	-	-	-	-	-	0	0	0	0	0	0	2	2	2	3	4	4	2	2	2	2	2	2	2	4	4	2	2	2
69	1701225	-	-	-	-	-	0	0	0	0	0	0	0	2	2	3	4	6	4	2	2	2	2	2	2	4	4	2	2	2
70	1712155	-	-	-	-	-	0	0	0	0	0	0	0	2	2	2	3	4	4	2	2	2	2	2	2	2	2	4	4	2	2

S.NO.	MRD.NO.	12hr	13hr	14hr	15hr	16hr	17hr	18hr	19hr	20hr	21hr	22hr	23hr	24hr	0	15	30	45	60	75	90	105	120
1	1409602	2	2	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
2	1404382	2	2	2	4	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
3	1412184	2	2	2	2	2	2	2	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
4	1450010	2	4	2	2	2	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	INJ TMD 50 MG	-	-
5	1476734	4	2	2	0	0	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
6	1408710	4	4	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
7	1483237	2	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
8	1409616	4	2	2	2	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
9	1485468	2	2	2	2	4	4	2	2	2	2	2	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
10	225855	2	4	4	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	INJ TMD 50 MG	-	-	-	-	-	-
11	1490563	2	2	2	2	2	4	4	2	2	2	0	0	0	INJ PCM IGM	-	-	-	-	-	-	-	-
12	1481933	4	4	2	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
13	1490208	2	2	2	2	2	2	2	4	4	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
14	1440815	4	4	2	2	2	2	0	0	0	2	2	2	2	INJ PCM IGM	-	-	-	-	-	INJ TMD 50 MG	-	-
15	1480845	2	2	4	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	INJ TMD 50 MG	-	-
16	1474400	4	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
17	1491020	2	4	4	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
18	1490317	2	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
19	1491710	2	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG	-
20	1489985	4	2	2	2	2	2	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	INJ TMD 50 MG	-	-
21	1499251	3	4	4	2	2	2	2	2	2	4	4	3	2	INJ PCM IGM	-	-	-	-	INJ TMD 50 MG	-	-	-
22	1489985	2	2	2	2	2	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
23	1511114	4	4	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
24	1663151	2	2	4	4	2	2	2	2	2	2	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
25	1652585	2	2	2	2	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
26	1513256	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
27	15610521	2	2	2	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
28	1271972	2	2	4	4	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
29	1499264	2	2	2	2	3	4	4	2	2	2	2	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
30	1519263	4	4	2	2	2	2	2	4	4	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
31	1244919	2	2	2	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
32	1527233	4	4	2	2	2	2	2	4	4	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
33	1509845	2	2	2	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	INJ TMD 50 MG	-	-
34	1501420	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
35	1527543	4	4	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
36	1514949	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
37	1511717	2	2	2	2	2	2	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
38	1536638	2	2	4	4	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
39	1635457	4	2	2	2	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
40	1310387	2	2	2	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
41	568591	2	2	2	4	4	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
42	217535	2	2	4	4	4	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
43	772670	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
44	1054451	4	2	2	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
45	1509845	2	4	4	2	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
46	1509845	2	4	4	2	2	2	2	2	4	4	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
47	1338626	2	2	4	4	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
48	1536141	2	2	2	4	4	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
49	1635457	2	2	2	2	2	2	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
50	1527990	2	2	2	2	2	4	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
51	24593	4	2	2	2	2	2	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	INJ TMD 50 MG	-	-	-
52	1330193	2	4	4	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
53	1656433	4	4	2	2	2	23	4	5	2	2	2	2	2	INJ PCM IGM	-	-	-	-	INJ TMD 50 MG	-	-	-
54	1342251	2	2	4	4	2	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
55	1605026	2	3	4	4	3	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
56	1338034	2	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
57	1711575	2	2	2	2	2	3	4	4	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
58	1298962	2	2	2	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
59	1341127	2	2	2	4	4	2	2	2	2	4	4	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
60	1332427	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
61	1638770	2	3	4	4	2	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 50 MG	-
62	1643344	2	2	4	4	2	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	INJ TMD 1 GM	-
63	1585818	4	4	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
64	1645267	2	2	2	2	2	4	4	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
65	1709081	2	2	2	4	4	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
66	1711994	2	2	2	2	2	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
67	1691457	2	2	2	3	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	INJ TMD 50 MG
68	1708318	2	2	2	4	4	2	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-
69	1701225	2	2	2	4	4	2	2	2	2	2	4	4	2	INJ PCM IGM	-	-	-	-	-	-	-	-
70	1712155	2	2	2	2	4	4	2	2	2	2	2	2	2	INJ PCM IGM	-	-	-	-	-	-	-	-

		INTERVENTION													
S.NO.	MRD.NO.	135	150	165	180	195	210	225	240	5HR	6HR	7HR	8HR	9HR	10HR
1	1409602	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM 1 GM	-	-
2	1404382	-	-	-	-	INJ PCM IGM	-	-	-	-	-	INJ TMD 5O MG	INJ PCM 1GM	-	-
3	1412184	INJ TMD 50MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM IGM	INJ TMD 50MG	-
4	1450010	-	-	-	-	-	-	-	-	-	-	-	INJ PCM IGM	-	-
5	1476734	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1GM	-	-
6	1408710	-	-	-	-	-	-	-	-	-	-	-	INJ PCM I GM	-	INJ TMD 50 MG
7	1483237	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM I GM	-	-
8	1409616	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
9	1485468	-	INJ TMD 50 MG	-	-	-	-	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-
10	225855	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
11	1490563	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG
12	1481933	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
13	1490208	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM 1GM	INJ TMD 50 MG	-
14	1440815	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM IGM	-	-
15	1480845	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
16	1474400	-	-	-	-	INJ TMD 50MG	-	-	-	-	-	-	INJ PCM 1 GM	-	-
17	1491020	INJ TMD 50 MIN	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
18	1490317	-	INJ TMD 50MG	-	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
19	1491710	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
20	1489985	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	-	-
21	1499251	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
22	1489985	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
23	1511114	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
24	1663151	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
25	1652585	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1GM	-	INJ TMD 50 MG
26	1513256	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
27	15610521	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
28	1271972	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-
29	1499264	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG
30	1519263	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
31	1244919	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
32	1527233	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
33	1509845	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
34	1501420	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
35	1527543	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM 1 GM	-	-
36	1514949	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
37	1511717	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG
38	1536638	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
39	1635457	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	-	-
40	1310387	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
41	568591	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
42	217535	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
43	772670	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	-	-
44	1054451	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG
45	1509845	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
46	1509845	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
47	1338626	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
48	1536141	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
49	1635457	-	-	-	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
50	1527990	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
51	24593	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
52	1330193	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM 1 GM	-	-
53	1656433	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ PCM 1 GM	-	-
54	1342251	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
55	1605026	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
56	1338034	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
57	1711575	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG
58	1298962	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
59	1341127	-	-	INJ TMD 50 MG	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
60	1332427	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-
61	1638770	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-
62	1643344	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-
63	1585818	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	-	-
64	1645267	-	-	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 ,MG	-
65	1709081	-	INJ TMD 50 MG	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
66	1711994	-	-	-	-	-	INJ TMD 50 MG	-	-	-	-	-	I NJ PCM 1 GM	-	-
67	1691457	-	-	-	-	-	-	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-
68	1708318	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
69	1701225	INJ TMD 50 MG	-	-	-	-	-	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-
70	1712155	-	INJ TMD 50 MG	-	-	-	-	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-

S.NO.	MRD.NO.	11HR	12HR	13HR	14HR	15HR	16HR	17HR	18HR	19HR	20HR	21HR	22HR	23HR
1	1409602	-	-	-	-	-	INJ PCM 1GM	-	-	-	-	-	-	-
2	1404382	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
3	1412184	-	-	-	-	-	INJ PCM I GM	-	-	INJ TMD 50 MG	-	-	-	-
4	1450010	-	-	INJ TMD 50 MG	-	-	INJ PCM I1GM	-	-	-	-	-	INJ TMD 50 MG	-
5	1476734	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
6	1408710	-	-	INJ TMD 50 MG	-	-	INJ PCM I GM	-	-	-	-	-	-	-
7	1483237	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
8	1409616	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	INJ TMD 50 MG
9	1485468	-	-	-	-	-	INJ PCM 1GM	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG
10	225855	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
11	1490563	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
12	1481933	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	-	INJ TMD 50 MG	-	-
13	1490208	-	-	-	-	-	INJ PCM 1 GM	-	-	INJ TMD 50 MG	-	-	-	-
14	1440815	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
15	1480845	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	INJ TMD 50 MG
16	1474400	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	INJ TMD 50MG	-	-	-	-	-	-
17	1491020	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
18	1490317	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
19	1491710	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
20	1489985	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
21	1499251	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
22	1489985	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
23	1511114	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
24	1663151	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
25	1652585	-	-	-	-	-	INJ PCM 1 GM	-	-	-	-	INJ TMD 50 MG	-	-
26	1513256	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
27	15610521	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
28	1271972	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-	-	-	-	-	-
29	1499264	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG
30	1519263	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
31	1244919	-	-	-	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
32	1527233	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	INJ TMD 50 MG	-	-	-	-
33	1509845	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	INJ TMD 50 MG	-	-
34	1501420	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
35	1527543	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
36	1514949	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
37	1511717	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
38	1536638	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-	-	-	-	-	-
39	1635457	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	-	-	INJ TMD 50 MG	-	-
40	1310387	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
41	568591	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
42	217535	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
43	772670	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
44	1054451	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
45	1509845	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	INJ 50 MG	-	-	-	-
46	1509845	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	INJ TMD 50 MG
47	1338626	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
48	1536141	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
49	1635457	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
50	1527990	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
51	24593	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
52	1330193	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
53	1656433	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
54	1342251	-	INJ TMD 50MG	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
55	1605026	INJ TMD 50 MG	-	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
56	1338034	-	-	-	-	INJ TM,D 50 MG	INJ PCM 1 GM	-	-	-	-	-	-	-
57	1711575	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
58	1298962	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
59	1341127	-	-	INJ TMD 50 MG	-	-	INJ PCM 1 GM	-	-	-	-	INJ TMD 50 MG	-	-
60	1332427	-	-	-	-	-	INJ PCM 1 GM	-	INJ TMD 50 MG	-	-	-	-	-
61	1638770	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	INJ TMD 50 MG	-	-	-
62	1643344	-	-	-	INJ TMD 50 MG	-	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
63	1585818	-	INJ TMD 50 MG	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
64	1645267	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
65	1709081	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
66	1711994	-	-	-	-	-	INJ PCM 1 GM	-	-	-	-	-	-	-
67	1691457	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
68	1708318	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-
69	1701225	-	-	-	-	INJ TMD 50 MG	INJ PCM 1 GM	-	-	-	-	-	INJ TMD 50 MG	-
70	1712155	-	-	-	-	-	INJ PCM 1 GM	INJ TMD 50 MG	-	-	-	-	-	-

			TOTAL ANALGESIA CONSUMPTION	ADVERSE EEFECTS									
			TRAMADOL	TIME OF ADVERSE EFFECT					TREATMENT ADMINISTERED				
S.NO.	MRD.NO.	24HR	-	BRADYCARDIA	HYPOTENSION	NAUSEA/VOMITING	DIZZINESS	OTHERS	BRADYCARDIA	HYPOTENSION	NAUSEA/VOMITING	DIZIINESS	OTHERS
1	1409602	INJ PCM 1 GM	50 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
2	1404382	INJ PCM 1 GM	100 MG	NONE	10:14 AM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
3	1412184	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
4	1450010	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
5	1476734	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
6	1408710	INJ PCM 1 GM	100 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
7	1483237	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
8	1409616	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
9	1485468	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
10	225855	INJ PCM 1 GM	250 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
11	1490563	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
12	1481933	INJ PCM 1 GM	150 MG	NONE	NONE	1:25 PM	NONE	NONE	NONE	NONE	INJ ODENSETRONE 4 MG	NONE	NONE
13	1490208	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
14	1440815	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
15	1480845	INJ PCM 1 GM	250 MG	NONE	NONE	12:40 PM	NONE	NONE	NONE	NONE	INJ ONDANSETRONE 4 MG	NONE	NONE
16	1474400	INJ PCM 1 GM	150 MG	NONE	1:10 PM ; 1:21 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG ; INJ EPHEDRINE 6 MG	NONE	NONE	NONE
17	1491020	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
18	1490317	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
19	1491710	INJ PCM 1 GM	250 MG	NONE	2:38 PM	2:40 PM	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	INJ ONDANSETRONE 4 MG	NONE	NONE
20	1489985	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
21	1499251	INJ PCM 1 GM	250 MG	NONE	10:21 AM ;	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
22	1489985	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
23	1511114	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
24	1663151	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
25	1652585	INJ PCM 1 GM	150 MG	NONE	4:23 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
26	1513256	INJ PCM 1 GM	150 MG	NONE	NONE	1:15 PM	NONE	NONE	NONE	NONE	INJ ONDANSETRONE 4 MG	NONE	NONE
27	15610521	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
28	1271972	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
29	1499264	INJ PCM 1 GM	250 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
30	1519263	INJ PCM 1 GM	250 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
31	1244919	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
32	1527233	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
33	1509845	INJ PCM 1 GM	250 MG	NONE	NONE	10:16 AM	NONE	NONE	NONE	NONE	INJ ONDANSETRONE 4 MG	NONE	NONE
34	1501420	INJ PCM 1 GM	150 MG	NONE	12:48 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
35	1527543	INJ PCM 1 GM	100 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
36	1514949	INJ PCM 1 GM	150 MG	NONE	NONE	11:34 AM,	NONE	NONE	NONE	NONE	INJ ONDANSETRONE 4 MG	NONE	NONE
37	1511717	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
38	1536638	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
39	1635457	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
40	1310387	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
41	568591	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
42	217535	INJ PCM 1 GM	150 MG	NONE	1:37 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
43	772670	INJ PCM 1 GM	100 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
44	1054451	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
45	1509845	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
46	1509845	INJ PCM 1 GM	250 MG	NONE	NONE	12:15 PM	NONE	NONE	NONE	NONE	INJ ONDANSETRONE 4 MG	NONE	NONE
47	1338626	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
48	1536141	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
49	1635457	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
50	1527990	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
51	24593	INJ PCM 1 GM	200 MG	NONE	2:38 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
52	1330193	INJ PCM 1 GM	100 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
53	1656433	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
54	1342251	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
55	1605026	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
56	1338034	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
57	1711575	INJ PCM 1 GM	200 MG	NONE	12:00 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
58	1298962	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
59	1341127	INJ PCM 1 GM	200 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
60	1332427	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
61	1638770	INJ PCM 1 GM	200 MG	NONE	9:21 AM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
62	1643344	INJ PCM 1 GM	200 MG	NONE	12:19 AM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
63	1585818	INJ PCM 1 GM	100 MG	NONE	10:48 AM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
64	1645267	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
65	1709081	INJ PCM 1 GM	150 MG	NONE	10:48 AM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
66	1711994	INJ PCM 1 GM	50 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
67	1691457	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
68	1708318	INJ PCM 1 GM	150 MG	NONE	2:53 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
69	1701225	INJ PCM 1 GM	200 MG	NONE	12:34 PM	NONE	NONE	NONE	NONE	INJ EPHEDRINE 6 MG	NONE	NONE	NONE
70	1712155	INJ PCM 1 GM	150 MG	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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Subject:: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 25.09.2023 has approved the plan of thesis of **Jaskaran Singh**, a student of your college for **MD Anaesthesiology** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Comparative study of 0.5% hyperbaric levobupivacaine and 0.75% hyperbaric ropivacaine in below umbilical surgeries under subarachnoid block .

Supervisor	Co-Supervisor:-
Dr. Suneet Kant Kathuria	Dr. Gurpreeti Grewal
Professor	Assoc. Professor
Dept. of Anaesthesiology	Dept. of Anaesthesiology

The student may submit the thesis in triplicate alongwith the plan in triplicate also, to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She may be directed to attach a photocopy of this letter with the forwarding letter while submitting thesis in the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic, if any.

Controller of Examinations

Note :

1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED
IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF MEDICINE

IN

ANAESTHESIOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES
FARIDKOT

JUNE 2022

DR. JASKARAN SINGH

DEPARTMENT OF ANAESTHESIOLOGY
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA
LUDHIANA, PUNJAB-141001

ABSTRACT OF PLAN OF THESIS

Title	**COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK**
For the degree of	MD ANAESTHESIOLOGY
Name of the candidate	DR. JASKARAN SINGH
Supervisor	DR. SUNEET KANT KATHURIA PROFESSOR, DEPARTMENT OF ANAESTHESIOLOGY DAYANAND MEDICAL COLLEGE AND HOSPITAL
Co-supervisor	DR. GURPREETI GREWAL ASSOCIATE PROFESSOR, DEPARTMENT OF ANAESTHESIOLOGY DAYANAND MEDICAL COLLEGE AND HOSPITAL
Institution	DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA
University	BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

Introduction: Bupivacaine has been used as a preferred drug for subarachnoid block since long time, but due to its long duration of action and associated side effects like cardio and neurotoxicity, newer drugs like ropivacaine and levobupivacaine are being evaluated as safer substitutes. Recently 0.5% levobupivacaine and 0.75% ropivacaine have been made commercially available. It has been shown in few studies that hyperbaric ropivacaine 0.5% produces shorter duration of subarachnoid block as compared to hyperbaric bupivacaine 0.5% whereas; hyperbaric levobupivacaine 0.5% produces clinical effects similar to that of hyperbaric bupivacaine 0.5%. In current study we plan to compare levobupivacaine and ropivacaine, to determine which one, out of these could be a better alternative to bupivacaine.

Aim of Study: To compare the sensory and motor block characteristics of hyperbaric Levobupivacaine and hyperbaric Ropivacaine for subarachnoid block in terms of time of onset of sensory and motor block, highest level of sensory block and degree of motor block and duration of sensory and motor block, intraoperative hemodynamic changes and side effects and duration of postoperative analgesia.

Materials & methods: A prospective, randomized, double blind study will be conducted on ASA I and II adults. A total of 70 patients will be recruited in the study and will be randomly divided into 2 groups. Patients will receive either 3ml of hyperbaric ropivacaine 0.75% or 3mlof hyperbaric levobupivacaine 0.5% in subarachnoid block. Primary outcomes will be sensory and motor block characteristics (time of onset, highest level and duration of sensory and motor block) and secondary outcomes will include perioperative complications, duration of postoperative analgesia and 24hr postoperative analgesic consumption. Data thus collected will be analyzed statistically

Clinical Significance: This study will help us evaluate clinical efficacy and safety of hyperbaric ropivacaine 0.75% in comparison with hyperbaric levobupivacaine 0.5% in patients undergoing below umbilicus surgeries under subarachnoid block.

Keywords: Hyperbaric, Ropivacaine, levobupivacaine, subarachnoid block, below umbilicussurgeries.

(Signature) Candidate	(Signature) Supervisor	(Signature) Co-supervisor	(Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK"** exist in the Department of Anaesthesiology at DMC&H, Ludhiana and will be provided to be candidate of will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

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Date: 10-9-2022

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	DR. JASKARAN SINGH
Department	ANAESTHESIOLOGY
Topic of Thesis	COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK
Likely date of appearing in PG examination	May/June 2024
Date of enrollment	30th March, 2022
Name of Head of Department	DR. ANJU GREWAL
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Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

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Approved: Yes / No

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Chairperson
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PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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4	DATE OF ADMISSION OF COURSE	30/ 03/ 2022
5	TITLE OF THE TOPIC	COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Spinal anaesthesia is popular all over the world for its easy technique, high degree of success rate, use of fewer drugs and fewer complications compared to general anaesthesia. Spinal anaesthesia is frequently used in surgeries below umbilicus. Effective spinal anaesthesia is possible with correct choice of local anaesthetic, which can provide desired anaesthesia and analgesia during operation and should have no side effects.

Traditionally, bupivacaine 0.5% has been the drug of choice for subarachnoid block. However, significantly long duration of action delays recovery of motor function and prolongs patient's stay in post anaesthesia care unit.[1] The need for development of newer stereo-selective local anaesthetic agents like ropivacaine and levo-bupivacaine, arose from reports of cardio-toxicity and neurological side effects in patients receiving intrathecal bupivacaine.[2]

Bupivacaine is a well-established long acting regional anaesthetic for spinal anaesthesia however, R(+) and S(-) enantiomers of local anaesthetics have been demonstrated to have different affinity for different ion channels of sodium, potassium, and calcium; which results in a significant reduction in central nervous system (CNS) and cardiac toxicity of the S(-) enantiomer as compared with the R(+) enantiomer.[3] The pure S (−) enantiomer of bupivacaine, i.e., Levo-bupivacaine and pure S (-) enantiomer of Propivacaine i.e. Ropivacaine were thus introduced into the clinical anaesthesia practice.

Levobupivacaine is S (−) enantiomer of bupivacaine and a suitable alternative to bupivacaine for spinal anaesthesia due to its less cardiotoxicity. Levobupivacaine produces subarachnoid block with similar sensory and motor block characteristics and recovery profile, like bupivacaine. Levobupivacaine has decreased cardio toxicity which is

attributed to its faster protein binding rate. The onset of sensory and motor block is hastened with the use of hyperbaric levobupivacaine.[4]

Ropivacaine is a long-acting pure S (-) enantiomer, developed for the purpose of reducing potential toxicity and improving relative sensory and motor block profiles. Ropivacaine is less lipophilic than bupivacaine and that, together with its stereoselective properties, contributes ropivacaine to have a significantly higher threshold for cardiotoxicity and CNS toxicity than bupivacaine.[1,5]

To overcome the concerns of drug toxicity and to understand the effect, tolerance and outcome of these newer local anaesthetic agents in intra-thecal blocks a few studies had been conducted in which they compared hyperbaric ropivacaine with hyperbaric bupivacaine and hyperbaric levo-bupivacaine with hyperbaric bupivacaine. Hyperbaric ropivacaine and hyperbaric levobupivacaine preparations have been recently made commercially available in India. Therefore, there is need for a comparative study between hyperbaric levobupivacaine and hyperbaric ropivacaine in patients receiving intrathecal blocks with regard to their time of onset, levels of sensory block, degree of motor block and time taken to recover from block.

6.2 REVIEW OF LITERATURE

The development of local anaesthesia started with isolation of local anaesthetics and the first amongst all being cocaine (the only naturally occurring local anaesthetic). The first regional anaesthetic technique performed was spinal anaesthesia and the first operation in spinal anaesthesia was done in 1898 in Germany by August Bier. Before this, the only local anaesthetic techniques were topical anaesthesia of the eye and infiltrate anaesthesia.

The term intrathecal neuraxial anaesthesia refers to the placement of local anaesthetic in or around the CNS in subarachnoid space comprising cerebrospinal fluid, which bathes brain and spinal cord. There is roughly 130-140 ml of CSF fluid in adults which continually circulates throughout the day. Approximately 500 ml of CSF gets produced daily.[6]

The administration of spinal anaesthesia requires appropriate positioning and understanding of neuraxial anatomy. Spinal anaesthesia is only performed in the lumbar area, specifically the mid to low lumbar levels to avoid damage to the spinal cord and also to prevent intrathecally injected medications from having any activity in the upper thoracic and cervical regions. The caudal end of the spinal cord is the conus medullaris and usually is at the lower border of the first or sometimes the second lumbar vertebral body.[7] The dural sac usually extends to S2/3. For these reasons, the insertion of the spinal needle for spinal anaesthesia is usually at the L3/4 or L4/5 interspace. Spinal cord trauma is more likely when choosing higher interspaces, especially in obese patients.[8]

Choice of suitable local anaesthetic is equally important as the technique of intrathecal block.

Levobupivacaine ([2S]-1-butyl-N-2 6-dimethylphenyl] piperidine-2-carboxamide) is an amino-amide local anesthetic drug belonging to the family of n-alkyl substitute pipecoloxylidide. The decreased toxicity of levobupivacaine is attributed to its faster protein binding rate. Levobupivacaine exerts its pharmacological action through reversible

blockade of neuronal sodium channels. The drug binds to the intracellular portion of sodium channels and blocks sodium influx into nerve cells, which prevents depolarization. It blocks nerve conduction in sensory and motor nerves mainly by interacting with voltage sensitive sodium channels on the cell membrane. The pKa of levobupivacaine is 8.1, similar to the pKa of the bupivacaine. The half-life is 3.3 hours. Alpha1-glycoprotein is the main binding site for levobupivacaine. In vitro, levobupivacaine is extensively metabolized with cytochrome (CYP) CYP3A4 isoform and CYP1A2 isoform to inactive metabolites, des-butyl levobupivacaine and 3-hydroxy levobupivacaine, respectively. In vivo, the 3-hydroxy levobupivacaine appears to undergo further transformation to glucuronide and sulfate conjugates, which are excreted in urine.[9,10]

Ropivacaine is a long-acting regional anaesthetic which belongs to the group of local anaesthetics, the pipecoloxylidides and has a propyl group on the piperidine nitrogen atom compared to bupivacaine, which has a butyl group.[11] Ropivacaine causes reversible inhibition of sodium ion influx, and thereby blocks impulse conduction in nerve fibres.[12] This action is potentiated by dose-dependent inhibition of potassium channels.[13] Ropivacaine is less lipophilic than bupivacaine and therefore, it has selective action on the pain-transmitting A-delta and C nerves rather than Aβ fibers, which are involved in motor function and this property contributes to ropivacaine having a significantly higher threshold for cardio-toxicity and CNS toxicity than bupivacaine in healthy volunteers. The mean half-life is approximately 4.2 hours.[14,15] Ropivacaine is metabolised extensively in the liver, predominantly by aromatic hydroxylation to 3'-hydroxy-ropivacaine by cytochrome P450 (CYP) 1A2 and N-dealkylation to 2', 6'-pipecoloxylidide by CYP3A4.The kidney is the main excretory organ for ropivacaine, accounting for 86% of the excretion of the drug in urine after a single intravenous dose administration.[16,17]

Dar et al have compared similar concentrations and doses of the hyperbaric preparations of the two local anesthetics. They administered

spinal injection of either 3 ml (15 mg) of 0.5% hyperbaric ropivacaine or 3 ml (15 mg) of 0.5% hyperbaric bupivacaine to the patients undergoing lower limb or hip surgery. Although the quality of anesthesia was excellent in both groups, the onset of sensory and motor block was slower in patients receiving ropivacaine. Furthermore, the duration of sensory as well as motor block was shorter in these patients. Although ephedrine requirements did not significantly differ between the groups; the ropivacaine administration was associated with a lower incidence of hypotension. Only 19% patients receiving ropivacaine in contrast to 66% of patients receiving bupivacaine developed hypotension. The results of this study support the earlier view that the intrathecal ropivacaine can be used to provide good quality anesthesia with lesser hypotension; however, it has a shorter duration than bupivacaine.[18]

J B Whiteside et al conducted a clinical trail on Forty ASA grade I-II patients undergoing lower-abdominal, perianal or lower-limb surgery under spinal anaesthesia were recruited and randomized to receive ropivacaine 5 mg ml (-1) (with glucose 50 mg ml (-1)), 3 ml or bupivacaine 5 mg ml(-1) (with glucose 80 mg ml(-1)), 3 ml. He concluded that there were significant differences between the two groups in mean time to onset of sensory block at T10 (ropivacaine 5 min; bupivacaine 2 min; $P<0.005$), median maximum extent (ropivacaine T7; bupivacaine T5; $P<0.005$) and mean duration of sensory block at T10 (ropivacaine 56.5 min; bupivacaine 118 min; $P=0.001$). Patients receiving ropivacaine mobilized sooner (ropivacaine mean 253.5 min; bupivacaine 331 min; $P=0.002$) and passed urine sooner (ropivacaine mean 276 min; bupivacaine 340.5 min; $P=0.01$) than those receiving bupivacaine. More patients in the bupivacaine group required treatment for hypotension (>30% decrease in systolic pressure; $P=0.001$).[19]

Kalpana R Kulkarni et al conducted a study involving 20 subjects in which 10 subjects of group R received 3ml of 0.5% hyperbaric ropivacaine and other 10 subjects of group B received 3ml of 0.5% hyperbaric

bupivacaine intrathecally. It was concluded that Ropivacaine produced a slower onset of sensory block (ropivacaine 4.5 min; bupivacaine 3.2 min; $P < 0.05$) and the mean total duration of sensory block was significantly lesser (ropivacaine155 min; bupivacaine 190.5 min; $P < 0.05$). Patients in the ropivacaine Group R had significantly more rapid recovery from the motor blockade (ropivacaine120 min; bupivacaine 190 min; $P < 0.05$) and passed urine sooner than the patients in bupivacaine Group B (ropivacaine 257 min; bupivacaine 358 min; $P < 0.05$).[20]

Chung, Chan-Jong et al evaluated the clinical efficacy and safety of spinal anaesthesia with 0.5% hyperbaric ropivacaine compared with 0.5% hyperbaric bupivacaine for elective cesarean delivery. Sixty healthy, full-term parturients were randomly assigned to receive either 12 mg of 0.5% hyperbaric bupivacaine or 18 mg of 0.5% hyperbaric ropivacaine intrathecally. Onset time of sensory block to T10 or to peak level was later in the Ropivacaine group ($P < 0.05$). The median (range) peak level of analgesia was T3 (T1-5) in the Bupivacaine group and T3 (T1-4) in the Ropivacaine group. Time for sensory block to recede to T10 did not differ between groups. Duration of sensory block was shorter in the Ropivacaine group (188.5 ± 28.2 min v/s 162.5 ± 20.2 min; $P < 0.05$). Complete motor block of the lower extremities was obtained in all patients. Ropivacaine also produced a shorter duration of motor blockade than bupivacaine (113.7 ± 18.6 min v/s 158.7 ± 31.2 min; $P < 0.000$). The intraoperative quality of anaesthesia was excellent and similar in both groups.[21]

J.F Luck et al studied Sixty ASA grade I–II patients undergoing elective surgery under spinal anaesthesia, who were randomized to receive 3 ml of bupivacaine, levobupivacaine, or ropivacaine, each at 5 mg ml−1 and made hyperbaric by the addition of glucose 30 mg ml−1. A standard protocol was followed after which a blinded observer assessed the sensory and motor blocks. The level and duration of sensory (pinprick) block, intensity and duration of motor block, and time to mobilize and to micturate were also recorded. There were no significant differences

between the groups with regard to the mean time to onset of sensory block at T10, the extent of spread, or mean time to maximum spread. Regression of sensory block in the ropivacaine group was more rapid as demonstrated by duration at T10 (P<0.0167) and total duration of sensory block (P<0.0167). Patients in the ropivacaine group had more rapid recovery from motor block (P<0.0167) and shorter times to independent mobilization (P<0.0167). There were no significant differences between the bupivacaine and the levobupivacaine groups.[22]

Orhan Gozaydin et al took Forty ASAI-II patients, with a unilateral inguinal hernia operation planned under spinal anesthesia by the surgeon, were included in the study. It was planned that the study be prospective and double-blind. The patients were allocated into two groups, each of which had 20 persons allocated randomly. Hyperbaric levobupivacaine and hyperbaric bupivacaine at 3 ml of 0.5% were given into the intrathecal space for groups HL and HB. There were no statistical differences between the groups for age, body weight, body mass index, ASA distributions, and operation period. The starting of sense block and full motor block time in group HB was found to be significantly short compared to group HB. One patient had hypotension in group HB, and one had intraoperative nausea in group HL. Postoperative urinary retention occurred in two patients in group HB and in one patient in group HL.[23]

6.3 AIMS AND OBJECTIVES OF THE STUDY

To compare the sensory and motor block characteristics of hyperbaric Levobupivacaine (0.5%) and hyperbaric Ropivacaine (0.75%) in below umblical surgeries under subarachnoid block in terms of

- Time of onset
- Highest level and duration of sensory and motor block
- Perioperative complications and postoperative analgesia
- 24hr postoperative analgesic consumption

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

A prospective, randomized, interventional, double blind study will be conducted in Department of Anaesthesiology, Dayanand Medical College and Hospital, Ludhiana after approval from the Institutional Ethics Committee on adult patients posted for below umbilicus surgeries under subarachnoid block. A written informed consent will be obtained from all patients selected for surgery.

7.2 METHOD OF COLLECTION OF DATA

INCLUSION CRITERION

Healthy individuals of either sex, age more than 18 years with American Society of Anaesthesiologists (ASA) physical status I, II scheduled for elective surgery.

EXCLUSION CRITERION

1. Age <18 years
2. Patients of ASA grade lll or more
3. Patients allergic to local anaesthetic agents
4. Patients with coagulopathies and thrombocytopenia
5. Patients with hypovolemia and hypotension
6. Patients with increased intra cranial tension
7. Patients with infections at site of drug administration
8. Patients with spinal deformities
9. Patient's refusal for consent

GROUP ALLOCATION

A prospective, randomized, double blind study will be conducted on ASA I and II adults. A total of 70 patients will be recruited in the study and they will be randomized into two groups of 35 patients each, using computer generated random numbers contained in sealed, sequentially numbered envelopes, which shall be opened by an independent anaesthesiologist for preparation of study drug. Depending upon nature of study drug patients will be grouped as follows:

- **Group (R):** Subjects will receive 3ml of 0.75% of hyperbaric ropivacaine intrathecally.
- **Group (L):** Subjects will receive 3ml of 0.5% of hyperbaric levobupivacaine intrathecally.

METHODOLOGY AND ANAESTHESIA TECHNIQUE

Anaesthesia Technique – All patients will be subjected to routine preoperative assessment and standard fasting protocols. On shifting to OR, monitors will be attached to patient to assess the patient's blood pressure; continuous EKG, continuous pulse oximetry and their baseline values will be recorded. Intravenous access will be established and intravenous fluid administration will be started before starting procedure of spinal anaesthesia. The anaesthesia provider will ensure all aseptic preparations and will ensure the all contents of spinal kit.

With the patient positioned in the sitting posture, he/she will be asked to maintain a flexed spine position to help open up the interspace. Back of spine will be cleaned with 10%w/v povidone –iodine solution in 3 layers starting from inferior border of scapula up to superior iliac crest and provider will wait for 3 minutes for its action, then the area will be cleaned with chlorhexidine solution containing alcohol and afterwards the area will be cleaned and dried with a sterile gauge. Area will be draped exposing L1 – L5 vertebrae and a suitable space is palpated with help of Tuffier's line and 2ml lignocaine 2% is injected in the space to raise a wheel after negative aspiration of blood.

A 26G quincke spinal needle will inserted in the space in the midline and directed cranially, the bevel of the needle will kept parallel to longitudinal axis of spine. Needle will be advanced till it punctures arachnoid membrane. Stylet will be withdrawn to observe free flow of CSF. A 5ml syringe containing study drug will be attached and the drug will administered at the rate of approximately 0.2ml/sec and case timer is started.

Group allocation and blinding Technique: Depending upon the nature of the study drug to be administered, a computer generated random number list of participants divided into 2 groups of 35 participants each will be prepared. Under all aseptic precautions, 3 ml of the study drug (0.5% hyperbaric Levobupivacaine or 0.75% hyperbaric Ropivacaine), will be loaded in code labeled 5 ml syringe by an anaesthesia resident who is not a part of further study. This drug loaded syringe will be handed over to the attending anaesthesiologist for further administration. Unaware of the administered drug, the attending anaesthesiologist will be responsible for the conduct of spinal anaesthesia and further intraoperative and postoperative management and observations. The drug codes will be decoded after the completion of study.

INTRAOPERATIVE OBSERVATIONS:

Vital Signs: Patient's Heart rate, Systolic Blood pressure, Diastolic blood pressure, Mean arterial pressure, saturation and respiratory rate are observed at every 2 minute for first 10 minutes after subarachnoid blockade and then every 5 minute interval for next 20 minutes and every 10 minutes thereafter.

After sub arachnoid block patients will be monitored for common side-effects like: hypotension, bradycardia, desaturation and respiratory depression etc. and appropriately managed.

- Hypotension will be defined as a drop in systolic blood pressure of more than 20% from baseline (or) systolic BP of less than 90 mm of Hg. It is managed with Inj. Ephedrine intravenously in increments of 6 mg, rapid IV fluid infusion and oxygen supplementation, as necessary.
- Bradycardia will be defined as heart rate of <60/min and managed with Inj. Atropine 0.6 mg IV.
- Respiratory depression will be defined as a respiratory rate of <8/min and/or oxygen saturation of <85% and it is managed with

oxygen supplementation, bag and mask ventilation or endotracheal intubation and IPPV as appropriate.

Sensory Block Assessment: Patient will be assessed for the level of sensory blockade using pinprick method with blunt pin placed in mid clavicular line on either side. Level of sensory blockade will be noted every 2 minutes for initial 10 minutes and then every 5 minutes till 30 minutes and every 15 minutes thereafter. Sensory block characteristics will be assessed as:

1. Time of onset (Time taken to attain T8 dermatome level sensory loss).
2. Time to highest level of Sensory block.
3. Duration of block. (Time of regression up to T12 dermatomal level)

The surgery will be allowed to commence after sensory block has reached T8.

Motor Block Assessment: The degree of motor block in the lower limbs will be assessed using a Modified Bromage Scale (MBS) every 2 minutes for initial 10 minutes and then every 5 minutes till 30 minutes and every 15 minutes thereafter. Motor block characteristics will be assessed as:

1. Onset of motor block (unable to flex knee Bromage 2)
2. Time to achieve highest degree of motor block.
3. Duration of motor block. (Time of regression to Bromage score 0 from time of giving intrathecal block)

MODIFIED BROMAGE SCALE

0 =able to raise straight leg against resistance i.e. no detectable motor block.

1=unable to raise straight leg but able to flex knee.

2=unable to flex knee but able to flex ankles.

3= unable to move hip, knee or ankle

POSTOPERATIVE ASSESSMENT

Upon shifting the patient in post anesthesia care unit, the HR, MAP, SBP, DBP, SpO2, level of sensory block and degree of motor block of the

patient will be assessed and recorded at 0 min (baseline), and then every 15 minutes till complete sensory and motor block regression is achieved.

Duration of postoperative analgesia: After shifting to recovery room a baseline pain assessment will be done using visual analogue scale (VAS) – a 10 point scale wherein 0 indicates no pain and a score of 10 indicates worst imaginable pain and then a regular pain assessment will be done every 1 hourly. As a standard postoperative analgesia protocol each patient will be give inj. Paracetamol infusion 1gm (15mg/kg) at the time of recovery from sensory and motor blockade. Duration of postoperative analgesia will defined as period from time of giving spinal block to the time for first request for rescue analgesia by the patient or when VAS will be more than 4. Inj. tramadol 50mg IV will be given and patients will be reassessed for VAS after 30 minutes. VAS if still more than 4, Inj. tramadol 50mg IV will be repeated till VAS is <4 or till up 100mg tramadol in last 6hrs or 400mg in last 24hrs. Total dose of Tramadol consumed in 24hrs will be recorded.

Patients with failed spinal anaesthesia and subsequent conversion to general anaesthesia will be excluded from the study.

OUTCOMES OF THE STUDY

PRIMARY OUTCOME:

- To compare Sensory and motor block characteristics of 0.5% hyperbaric levobupivacaine and 0.75% hyperbaric ropivacaine under subarachnoid block in terms of:
    - Time of onset of sensory and motor block
    - Highest level of sensory block and degree of motor block
    - Duration of sensory and motor block

SECONDARY OUTCOME:

- Duration of postoperative analgesia
- Postoperative 24 hour analgesic consumption
- Perioperative complications

SAMPLE SIZE CALCULATION:

$$N = 2 \times \left(\frac{z_{1-\frac{\alpha}{2}} + z_{1-\beta}}{\delta_0} \right)^2 \times s^2$$

The researcher assumes all parameters as:

Z1-α/2 = 1.96, Z1-β=0.84(80% power)

• Mean duration of sensory block in one treatment is 183

• Mean duration of sensory block in second treatment is 111

• S (pooled SD of both comparison groups) = 7.4

• δ0 (clinically difference) = 72

For 80% power and 0.05 as level of significance, sample size come out to be 33 each group, keeping 10 % drop out in mind, we will take sample size 35 each group.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data is normally distributed Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square (χ2) test will be performed and fisher exact test was used when the expected frequency is less than 5. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

No special investigation or intervention for the purpose of this study only, will be conducted.

7.4 HAS ETHICAL CLEARENCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached here with.

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PROFORMA

S. No. MRD No. Randomization No.

Name initials: Age/Sex ASA Physical status:

Height Weight BMI

Diagnosis Surgery Performed

Date of surgery Duration of Surgery

TIME POINTS

Time of Intrathecal Injection	
Sensory Level T8 (Onset)	
Highest/Max. sensory level achieved_____	
Sensory Level T12 (Regression)	
MBS grade 2 (Onset)	
Highest/Max. Motor block achieved _____	
MBS grade 0 (Regression)	

TIME PERIODS

S. No.	Parameters	Duration (in minutes)
1.	Time of onset of sensory block	
2.	Time of onset of motor block	
3.	Time to reach peak sensory level	
4.	Time to highest level of motor block	
5.	Time to achieve sensory regression to T12 dermatome	
6.	Time to achieve complete motor regression	
7.	Duration of analgesia	

Signature of Candidate Signature of Supervisor

INTRAOPERATIVE MONITORING

Time in minutes	HR/min	SBP (mmHg)	DBP (mmHg)	MAP (mmHg)	SpO2 (%)	Level of sensory blockade	Modified Bromage Score
Baseline (mean of 3 readings)							
0 (immediately after spinal injection)							
2							
4							
6							
8							
10							
15							
20							
25							
30							
45							
60							
75							
90							
105							
120							
135							
150							

POSTOPERATIVE MONITORING

Time (min)	HR (min)	SBP (mmHg)	DBP (mmHg)	MAP (mmHg)	SpO_2 (%)	Level of sensory blockade	Modified Bromage Score	VAS	Intervention
0									
15									
30									
45									
60									
75									
90									
105									
120									
135									
150									
165									
180									
195									
210									
225									
240									
5hr									
6h									
7h									
8h									
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18h									
19h									
20h									
21h									
22h									
23h									
24h									

Signature of Candidate

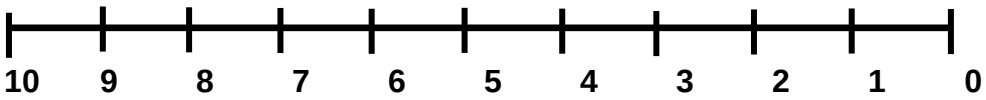
Signature of Supervisor

ADVERSE EFFECTS

Adverse Effects	Time of adverse effect	Treatment administered
Bradycardia		
Hypotension		
Nausea/Vomiting		
Dizziness		
Others		

Visual Analogue Scale

No pain **Worst pain**



Worst pain **No Pain**

INFORMED PATIENT CONSENT

Date: _____

I……..D/o,W/o,S/o…… …. ……am willing to participate in the study **"COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

…… ……

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीजअनुमतिफार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इसशोधकार्य **"COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK"** मेंभागलेनेकेलिएसहमतहूँ।मैंइसशोधकार्यमेंभागलेनेकेलिएअपनीस्वेच्छासेतैयारहूँ।मैंपुष्टिकरता/करतीहूँकीयहस्वीकृतिदेनेकेलिएमुझेकोईआर्थिकप्रलोभननहींदियागयाऔरनहीदबावडालागयाहै।मुझेइसशोधकार्यकाउद्देश्यस्पष्टकरदियागयाहैऔरमुझेयहविश्वासहैकीयहविज्ञानऔरमानवताकेलाभकेलिएहै।मुझेइसशोधकार्यमेंहोनेवालेजोखिमकेबारेमेंसमझादियागयाहैऔरमेरीसमझमेंयहजोखिमबहुतमामुलीहै।

मैंइसशोधकार्यमेंभागलेनेकेसम्बन्धमेंकिसीभीसमयअपनीअस्वीकृतिव्यक्तकरसकता/सकतीहूँऔरमेरेअस्वीकृतिव्यक्तकरनेकामेरेइलाजपरकोईप्रभावनहींपड़ेगा।

_____	_____
गवाहकेहस्ताक्षर	रोगीकेहस्ताक्षर/अंगूठेकानिशान
नाम:	नाम:

_____

अन्वेषक केहस्ताक्षर

_____

विद्यार्थीकेहस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ_____ **“COMPARATIVE STUDY OF 0.5% HYPERBARIC LEVOBUPIVACAINE AND 0.75% HYPERBARIC ROPIVACAINE IN BELOW UMBILICAL SURGERIES UNDER SUBARACHNOID BLOCK”** ਤੇਚਲਰਹੀਖੋਜਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ–ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈਸਕਦਾ ਹਾਂ/ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

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ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

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ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

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ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ